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ABSTRACT

Hearings on the role of higher education in reducing hunger and malnutrition are presented. Within this country a key concern is nutrition and consumer education, especially of low-income people, as well as nutrition education for health and other professionals. In addition to providing food and feed grains to Third World countries, the United States has passed legislation to increase the participation of U.S. land-grant colleges in international agricultural development activities. The contributions of colleges in cooperative projects include a combination of technology transfer, institution building, and the strengthening of human resources. Cooperative projects can involve contracts and direct involvement of professors in agricultural development; long-term collaboration between researchers and extension workers in U.S. and Third World colleges; and collaboration between U.S. universities and the international agricultural research centers. Supplementary materials include the Institute for Food and Development Policy's "Food First Curriculum," the California State Department of Education's framework for integrating the hunger issues in the school curriculum (grades K-12), the article "A Framework for Development Education in the United States," and the spring 1984 issue of "Resources." (SW)

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ROLE OF EDUCATIONAL INSTITUTIONS IN HELPING TO ALLEVIATE WORLD HUNGER

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HEARING

BEFORE THE

SELECT COMMITTEE ON HUNGER HOUSE OF REPRESENTATIVES

NINETY-EIGHTH CONGRESS

SECOND SESSION

HEARING HELD IN DAVIS, CA, JULY 21, 1984

Serial No. 98-3

Printed for the use of the Select Committee on Hunger

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ROLE OF EDUCATIONAL INSTITUTIONS IN HELPING TO ALLEVIATE WORLD HUNGER

SATURDAY, JULY 21, 1984

House of Representatives,
Select Committee on Hunger,
Davis, CA.

The committee met at 10:25 a.m. in the Young Building, University of California at Davis, Hon. Mickey Leland (chairman of the committee) presiding.

Members present: Representatives Hall, Fazio, and Emerson.

The Chairman. Good morning. Before I make my opening statement, I would like to yield to my colleague, Mr. Fazio.

OPENING STATEMENT OF HON. VIC FAZIO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. Fazio. Thank you, Mr. Chairman. I would like to begin by welcoming you as chairman of this Select Committee on Hunger, and my good friends Tony Hall of Ohio, who is the chairman of the task force that's here to focus today on international problems, and Bill Emerson of Missouri, who was the ranking minority member on the Agriculture Committee's Subcommittee on Food and Nutrition, along with Leon Panetta of California, another member of this committee, and one of the more important Members of the House in this regard. All three of you are obviously people who are willing to take some time out of a very busy schedule, and in some cases after a very busy week, to continue to devote time and preparation to the subject of solving the problems of hunger both here and abroad.

A great deal of work went into making this hearing a reality, and a debt of gratitude is also owed to the staff of the committee and to the staff of the International Programs Office here on the campus, who have been more than helpful and who have patiently complied with the tight deadlines and extensive preparations required for holding a congressional hearing.

The University of California-Davis campus, located in one of the most abundant agricultural areas in this country, is an appropriate setting for a hearing by the Select Committee on Hunger for a variety of reasons. As a preeminent member of the distinguished California educational system, University of California-Davis has a reputation for academic integrity that is appropriate to the theme of this hearing.

The problems of world hunger are great. Millions of people in the world today are suffering irreversible damage to their minds and bodies from chronic malnutrition. A growing number of Americans are deeply concerned with the problems of world hunger. A survey of this Nation's major newspapers and periodicals reveals headlines devoted to the problems of hunger at home and abroad on a continuing basis. I see this concern reflected in the communications I receive from my constituents, and I'm sure my colleagues have witnessed similar trends.

Yet, in some ways, world hunger is an enigma, for a solution is not as simple as merely more food, increased production and adequate food reserves. As vitally important as high productivity and emergency reserves are, they still do not provide the final solution to the problem of hunger. Over the past 10 years, worldwide food production has improved, yet we still face widespread malnutrition.

Frustrated by our own inability to adequately feed the world, we must turn to eliminating the causes of hunger; namely, poverty and insecure food supplies. This is where the contributions of our universities and private voluntary organizations are invaluable.

The very complexities that surround the causes of and solutions to hunger make the role of educational institutions in alleviating world hunger even more important. Our universities provide valuable food and nutrition research, and the private voluntary organizations are in the forefront of assistance geared toward the local needs of developing countries.

Furthermore, the educational system is an important means by which the public can be educated about the causes of world hunger. So, for that reason and for others, I look forward to today's discussions. We hope to learn a great deal from the practical experience of a number of individuals in and around this community who have worked overseas and have worked effectively under a variety of programs, through AID and directly.

This area in many ways is a breadbasket for our own Nation as well as the rest of the world, and in that regard I call the attention of my colleagues and constituents to a news story that appeared in a newspaper just the other day reporting the sales of 72,500 tons of medium-grain rice to two famine stricken African nations, from this region that we are a part of. In this very abundant region I hope we can carry beyond our own narrow interests in terms of economic growth for ourselves or our communities and simply the general concern we feel about hungry people wherever they are, to some practical solutions and perhaps to some new realizations that might lead us in Congress to fund some new programs or defund some others if that is apropriate.

So, Mr. Chairman, my good friend Mickey Leland, and Tony Hall, and Bill Emerson, once again thank you for taking the time today here in Davis, CA, to really focus on the role of educational institutions in the solution of the problems of world hunger around the world.

[The prepared statement of Mr. Fazio appears at the conclusion of the hearing, see p. 104.]

OPENING STATEMENT OF HON. MICKEY LELAND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

The CHAIRMAN. Thank you.

I would just say good morning to everyone. I'm Congressman Mickey Leland, chairman of the House Select Committee on Hunger. We're very pleased that we are able to hold our first International Task Force hearing here at the University of California at Davis. And I want to personally thank the university and my colleague Congressman Vic Fazio, for hosting the select committee hearing here, in which we seek to learn more of the role of educational institutions in helping to alleviate world hunger and malnutrition.

Let me personally say, thank you, Vic, for inviting us here. It is very helpful for the committee to be in an agriculturally productive region of the country, and I appreciate the gentleman from California's effort and the time he has committed to the committee. I think he deserves commendation both from his constituents and this institution.

I would venture to say the people of America thank you, because we have already learned so much about the great strides made in research regarding small ruminants projects and innovations, in plant growth technology. I think that what we've seen and heard today has been very helpful to the committee.

The select committee, which became operational in April of this year, recognizes the numerous dimensions of the hunger problem which adversely affects hundreds of millions of individuals throughout the world. The committee has and will continue to address such issues as: Food assistance programs in the United States, U.S. development and economic assistance programs in the executive branch structure responsible for administering the program, world food security, trade relations between the United States and less developed nations, food production and distribution, corporate and agri-business efforts to further international development, and policies of multilateral development banks and international development institutions.

Today we will be focusing on a central issue of great interest and importance to the select committee, that of increasing public awareness of world hunger, and of the contributions of educational institutions in programs that assist in alleviating hunger and malnutrition. The select committee is particularly interested in hearing from our witnesses recommendations that would better assist Congress in structuring policy that would directly affect the poorest of the poor. In the process the committee has commissioned an assessment of food problems and technological opportunities in sub-Saharan Africa by the Congressional Office of Technology Assessment.

It is our belief that new or improved agricultural technologies, if transferred successfully, can have a substantial effect on food production and distribution 10 to 15 years from the time of introduction. Changes in agricultural development and food distribution institutions can take even longer to be effective. Thus, technologies and institutional changes introduced today need to be appropriate for Africa 10 to 20 years from now. At the same time these changes must be useful and acceptable now or adoption will not proceed by the host country.

We believe appropriate focus should be placed on technologies which the poorest 50 percent of the farmers can afford. Specifically, consideration must concentrate on poor producers as well as poor consumers. For these and other reasons, the committee is very interested in hearing from our distinguished panelists recommendations which have stemmed from their experience in their particular areas of expertise.

Now, before we proceed with the witnesses, I'd like to introduce Congressman Bill Emerson from Missouri.

[The prepared statement of Mr. Leland appears at the conclusion of the hearing, see p. 106.]

OPENING STATEMENT OF HON. BILL EMERSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSOURI

Mr. **Emerson**. Thank you, Mr. Chairman. I'm pleased to be here in Davis, CA, for this field hearing. The objectives and work of this university in the international field are well known in the Congress. We do, indeed, thank our colleague, Mr. Fazio, for inviting us here today.

A former colleague of ours, who served with distinction on the House Agriculture Committee, is now a member of the Board for International Food and Agricultural Development. In fact, Paul Finley of Illinois was coauthor with the late Senator Hubert Humphrey of the title XII legislation which fostered this remarkable system of harnessing the vast educational extension and research resources of our land-grant universities to help develop agriculture in Third World countries.

The purpose of this hearing is to examine efforts on the part of several entities to combat world hunger. I think it is particularly significant that this hearing is being held on the anniversary, the 30th, of Public Law 480, the Agricultural Trade Development and Assistance Act of 1954.

The purposes of Public Law 480 are: To provide humanitarian assistance to support economic development within recipient countries, to expand international trade and develop markets for U.S. agricultural commodities, and to promote the foreign policy of the United States.

The first objective, feeding the hungry, is the primary focus of the hearings being held today. Public Law 480, or the Food for Peace Program, has enriched the diets and the lives of 1.8 billion men, women, and children in countries all over the world. Under this program the United States continues to contribute more food assistance annually to other countries than all other nations combined. This is possible because our farmers have established an imposing record of growth and abundance and our citizens have an equally impressive record of care and giving.

We are fortunate, indeed, to have the resources to allow us to donate food to combat malnutrition and to ease emergency situations such as famine. Food grains and feed grains represented nearly half of the total of the $33 billion value of Public Law 480 shipments. Wheat shipments were $11.8 billion and feed grains $3.1 billion. Other major exports were cotton, soybean oil, and nonfat dry milk. This means that under Public Law 480 more than $3 million a day has gone to over 100 countries.

I hope our witnesses today will focus on what has been accomplished through various Government and private aid programs, and then on what they see as the role of educational institutions in countering hunger in our world. I would like to mention one other area of today's hearing for which I have a deep interest; that is, nutrition education. We will be hearing from witnesses as to their involvement in nutrition education in developing countries and also education in schools in the United States concerning world hunger. I hope these witnesses will also comment on what I feel is sorely lacking in our own country, nutrition education and consumer awareness, especially of low-income people for whom it is especially important that they stretch their food dollars and provide themselves and their families with nutritious meals.

Overall, the entire concept of nutrition education as a part of the education and training of health and other professionals is extremely important. More and more there is agreement among many that nutrition is an integral part of maintaining the well-being of the population. It makes sense that the more we, ourselves, know how to stay in good health and to share that knowledge with others, the better off we are; and good nutrition is part of that picture.

So, I am looking forward very much to today's hearing, and thank you very much, Mr. Chairman.

[The prepared statement of Mr. Emerson appears at the conclusion of the hearing, see p. 108.]

Mr. EMERSON. Also, I request unanimous consent to insert a statement in the record by Mrs. Roukema, who cannot be with us today.

The CHAIRMAN. Without objection the statement will be entered into the record at this point.

[The prepared statement of Mrs. Roukema appears at the conclusion of the hearing, see p. 111.]

The CHAIRMAN. I would like, now, to introduce Congressman Tony Hall from Ohio—who worked very diligently to establish the Select Committee on Hunger, and who chairs the task force on hunger in developing countries. Mr. Hall will chair our hearing today.

OPENING STATEMENT OF HON. TONY P. HALL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO

Mr. TONY P. HALL [presiding]. Thank you, Mickey.

I would also like to thank the faculty of the University of California at Davis for opening the university to us.

I extend special thanks to Vic Fazio for hosting this select committee's field hearing.

Today we will be hearing from experts who will brief the committee on their involvement in activities that assist in alleviating world hunger. The committee is particularly interested in hearing their recommendations on how to maximize the effectiveness of U.S. activities that alleviate hunger and malnutrition. I should emphasize that we want to focus on concrete benefits to hungry people rather than on benefits to populations in Third World countries that are better off.

Our first panel will discuss projects concerning agriculture and technology. At noon we will break for about an hour for lunch. The second panel will begin approximately at 1 p.m. This panel will discuss health, nutrition, and population activities. Our third panel will start at about 2:15. They will be informing us of the contributions educational institutions can make to both programs in developing countries and activities that seek to increase the awareness of the American public on world hunger issues.

Thank you for allowing us to be here. I would just emphasize, that we have a number of very distinguished witnesses. We want to hear all of you. We ask that you summarize your statements.

[The prepared statement of Mr. Tony P. Hall appears at the conclusion of the hearing, see p. 116.]

Mr. TONY P. HALL. Our first panel of witnesses will address the issues of agricultural technology. The first three members of the panel are Mr. David Robinson, associate dean of international programs and professor of animal science, food intake regulation; Dr. Charles Hess, dean of the College of Agricultural and Environmental Sciences; and Alex McCalla, professor of agricultural economics and policy at the University of California in Davis.

If you would, just go down the line and briefly read or summarize your statements, and then we will have the opportunity to ask you questions.

STATEMENT OF DAVID W. ROBINSON, ASSOCIATE DEAN, INTERNATIONAL PROGRAM, OFFICE OF INTERNATIONAL PROGRAMS, UNIVERSITY OF CALIFORNIA AT DAVIS

Mr. ROBINSON. Members of the select committee, ladies and gentlemen, it's a privilege to have this opportunity to meet with you and a pleasure to welcome you to the Davis campus, which has been involved in the issues of food and hunger for many years. My assignment is to present a broad overview, to initiate the discussion, many issues of which no doubt you've heard before.

My work compels me to work overseas in Third World countries for about 6 months of each year, with scientists, administrators, and, in fact, small farmers also. My perspective is a very personal one and is colored by what I see and what I hear, but also by what I believe.

In our world of astonishing wealth, people go hungry. In fact, 16 million die each year from hunger and over 500 million are malnourished; 2 billion people live in environments where food security cannot be guaranteed. Hunger and malnutrition are not new, but the scale of the problem is new. And hunger will become a very destabilizing force quite soon.

What is the cause of hunger, we may ask ourselves. And quite simply the answer is poverty. What is the solution to poverty, then? And the answer, we might say, is economic self-sufficiency for every family in every nation.

The reasons that people go hungry are very complex and subject, of course, to a lot of interpretation. And I can only touch on one or two of the major issues, details of which will be provided by other speakers later. First of all there is the human factor. We are witnessing, at the present time, a biological phenomenon unprecedented in human history. It is the growth of the human population, a population which has doubled in the last 50 to 75 years and has the potential to double again in the next 25; 93 percent of this increase will occur in the six least developed countries in the world, and none of it will occur in the six most developed countries of the world.

Our current optimism about the ability to feed so many people is based on our experience of the Green Revolution, but we must temper such optimism by two thoughts: The power of exponential growth that applies to population dynamics does not apply to food production capacity; and, second, the characteristics of the production curves for the staple foods are clearly beginning to show a plateau effect.

When food becomes the factor that controls population, its partner is inevitably misery of the most agonizing kind, because hunger strikes the most vulnerable first—small children, women of childbearing age, and the elderly. The battle to control population is not being won, and the effect that we see in the world is a rise in the number of illiterate people, a widening gap between the rich and the poor, and the future of Third World countries mortgaged to the international banks. We are, as it were, living on borrowed time.

Let me quote to you the statement of the chairman of one of these banks, the chairman of the World Bank, in fact, speaking last month in Nairobi, in Kenya, where he used Kenya as an example. He stated:

> The present population of 20 million is likely to increase eightfold to a staggering 160 million in the next 65 years. * * * A situation surely as impermissible as it is unimaginable,

He said. He went on to say that:

> * * * poverty and rapid population growth reinforce each other. Therefore, the international community has no alternative but to cooperate with a sense of urgency in an effort to slow population growth, if economic development is to be achieved.

Such advice is in stark contrast to what we understand the statement from the present administration will be, in 2 weeks time, at the World Population Conference in Mexico.

Then, of course, there is the food factor. The Green Revolution was—and still is—a spectacular epoch in our history. Perhaps it's most spectacular feature was its low cost. It's unconceivable that funds for agricultural research and education are so low, given the cost/benefit ratio that can be achieved from their use. The Green Revolution raised farmers' yields sometimes by eightfold, and also changed the way that they looked at farming. They became businessmen from being farmers, acutely aware of such issues as credit, insurance, high-cost inputs, and the vulnerability of their enterprises should those inputs go missing.

As agricultural scientists we are confident that the momentum of the Green Revolution can be maintained if technological research continues to be supported and if the socioeconomic factors which limit population growth, the other side of the equation as it were, are put in place. And these are: Education, reduction in infant mortality, and economic self-sufficiency.

We do live in a curious world of food aplenty and widespread hunger. In the Third World, for example, we see farmers exhaust-ing good agricultural land from over use, opening up unsuitable lands for new agriculture as population pressure builds, and famine from unpredictable droughts and pestilence. In the Old World we see, in Europe, mountains of butter, and cheese, and food being uneconomically produced and dumped in the Eastern bloc. And in the New World, here in the United States, we see mountains of grain and dairy produce, likewise, produced and dumped in the Eastern bloc, also. Meanwhile, our farmers go bankrupt on their small farms from low prices or are paid to remove land from production. Clearly, in a world of plenty, distribution remains a very serious problem.

With respect to the distribution problem, the United States holds a particularly significant place. It has become the broker of the world's food surpluses and controls the destiny of many smaller nations. This has come about from the farsighted legislation which strongly supported agriculture and education and linked them firmly together. Through the industry of our farmers, the United States now has food security and surpluses, the cheapest food relative to income anywhere in the world and the most varied and sanitary diet.

The United States has also been—as has been stated—the most generous donor of surpluses to needy nations, not only in disaster relief but through long-term commitments. But increasingly, food could be used as a weapon. The hungry of other nations cannot threaten us, and are too preoccupied by their poverty to threaten us, and frequently the most needy are the least able to buy, and those most favored are those most feared.

How shall we overcome the causes of hunger? Hunger cannot be solved by one individual, by one nation, nor in one instant of time. It requires a collective willingness to test and support all the approaches available. But the rich and the affluent, be they individuals like you and me or in nations such as the United States, do carry the major responsibility. If we consume too much, others must consume too little. And currently each of us in this room consumes about 20 to 25 times the energy needed to sustain the average individual living in India. Unfortunately, it seems that as our riches grow so in parallel grows our indifference sometimes.

You must forgive me if, for a brief moment, I broaden the debate to the issues that have the greatest impact on world hunger. We richly and rightly cherish the freedoms that we enjoy. They were won by revolution, as we've just celebrated. Why, then, are we so afraid of those in revolt against their own poverty? Why, when we see so many cling tenaciously to lives filled with hunger, do we spend billions refining quite useless instruments of mass death? As a consequence, our aid to the needy as a percent of our wealth has to decrease, and most of our aid budget does not, in fact, hit the hungry world.

Finally, in conclusion, may I say this, there are many people overseas in the assistance agencies that I meet and I consider my friends, who have true missionary zeal. Their work should not be underrated. They work with foreign colleagues who are not naive and it is understood that we are entitled to place our own self-interest first; that is, we can use aid to influence people and we can use aid to sell our own products, and we can also be philanthropic, as we have been. But what we need to understand, I believe, is that it is definitely in our own self-interest to solve the problem of hunger. If we don't solve it, somebody else will. And if hunger isn't solved, then hunger will become our own problem.

In your capacity you have the opportunity—perhaps we might even say the responsibility—to make bold decisions that will affect the lives of millions of people. Our hope is to influence you in the right direction. This university has a mandate: it is a mandate to seek the truth, to search for new knowledge, and to make the truth and knowledge available to all the family of mankind. We hope to train a cadre of people who not only understand the problems of hunger and poverty but who have the sensitivity and the courage to resolve them. All of these students, our faculty, and our resources are at your disposal in the high responsibility that you have as a Select Committee on Hunger.

Thank you.

Mr. TONY P. HALL. Thank you.

RESPONSE TO QUESTION FOR DAVID W. ROBINSON

QUESTION SUBMITTED BY HON. MICKEY LELAND

Question. What is being done to foster interdisciplinary communication within Universities?

Answer. There has always been good interdisciplinary communication within Universities that have departmental structures running vertically and disciplinary graduate groups running horizontally. Eg:

Disciplinary groups: Genetics, nutrition, biochemistry, et cetera.

Departmental structure: Department of Animal Science, Department of Food Science, and Department of Veterinary Medicine.

In this way there is good result: disciplinary crossreferencing in departments that have all disciplines represented and good application within the disciplines that have the commodity department's represented.

Interdisciplinary communication is less well organized in international work but has recently received a tremendous injection through Title XII programs and USAID's support of International countries. For example, every CRSP (Coraborative Research Support Program) includes economists, sociologists, chemists, plant production, health, nutrition etc. disciplines. This has forced an interdisciplinary approach to problem solving research.

[The prepared statement of Mr. Robinson appears at the conclusion of the hearing, see p. 119.]

Mr. TONY P. HALL. Mr. Hess.

STATEMENT OF CHARLES E. HESS, DEAN, COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES, UNIVERSITY OF CALIFORNIA AT DAVIS

Mr. HESS. Mr. Chairman, my name is Charles Hess. I am dean of the College of Agricultural and Environmental Sciences, and also I serve on the Joint Committee on Agriculture Research and Development [JCARD] which is a unit of the Board for International Food and Agricultural Development, as Mr. Emerson referred to, and on which Congressman Finley is now a member.

The Foreign Assistance Act that was amended in 1975 to include title XII, the Famine Prevention and Freedom from Hunger Act, really provided a major strategy for getting land-grant colleges and universities of the United States more deeply involved in strengthening the institutional infrastructure in agriculture in the developing countries. And, in the testimony, I've listed the goals of the title XII program.

The passage of that legislation and its subsequent implementation about 1½ years afterward, heralded a major organized increase in the participation of U.S. universities in international agricultural development activities. At about the same time the, Davis campus, at the invitation of the Government of Egypt, entered into a program with the Government of Egypt, with the Agency for International Development, and UC.

The project, UC-Egypt project, is often looked upon as one of the first title XII projects. In fact, it was actually independent of that legislation and started before that legislation was even implemented. However, we are very much involved in a number of programs under the title XII structure. Examples are: The Small Ruminants CRSP—which you had a chance to see part of the activities here at Davis this morning--and other CRSP's, which are the collaborative research support programs involving dry beans and cowpeas. We also helped plan a nutrition program and one in aquaculture; neither of which has been implemented as yet. And we also have relationships with other universities in Mexico and in China, and are exploring other relationships with universities throughout the world.

The contributions of the universities in these projects include a combination of technology transfer, institution building, and the strengthening of human resources. I will give examples of each of the categories based upon our experience in Egypt, and I'll start with technology transfer.

As you know the University of California has a long history in the development of new tomato varieties used for tomato products and for fresh market. Improvements have been made in the ability to harvest the tomatoes, in nutritional quality, in soluable solids, flavor, and color, as well as drought resistance and adaptability to grow under environmental stresses, such as high salt levels which we talked about this morning.

In the past 30 years, the average yield of tomatoes has gone from about 10 to 15 tons per acre to an average, now, of about 27 tons per acre. The UC-Egypt project, when it was initiated the average yield of tomatoes in Egypt was about 7 tons per feddan, which is roughly the size of an acre. A collaborative breeding program was established involving our scientists here and Egyptian scientists, and using germ plasm from the University of California. And as a result, five superior high yielding, disease resistant cultivars were introduced by the project and were grown on some 40,000 feddans in Egypt in 1983. So, they weren't just experimental plots, these were really in production.

The combination of the new cultivars, improved insect control, better irrigation management practices, raised tomato yields from the 7 tons to a range of 20 to 30 tons per feddan. It is projected that the new technology will increase the annual value of the tomato crop by 161 million Eqyptian pounds. It represents, actually, a tenfold return on the $15 million investment that was made on the total Egypt project. And there were many other components of that project which also made major contributions in terms of food production. Another subproject involved the strengthening of the agricultural-economics science in Egypt. Agricultural economics had been diminished during the time Russia had occupied or was very influential in Egypt; it was essentially a nonscience at that time. And as a result of this project, agricultural economics has recovered to a point where it is a recognized science and playing a very important role in policymaking in the Government of Egypt.

Incidentally, I would like to introduce Bill Sims, who is in the audience, who is the faculty member who headed up the horticulture subproject in Egypt and is also known as Mr. Tomato around the world.

Bill, why don't you stand up. [Applause.]

Bill is the individual that helped achieve the successes in the Egypt project.

There's often concern on the part of domestic agriculture interests that international programs create competition and may diminish U.S. markets for our products. However, the project in Egypt contributed to United States and California agriculture as well as to Egyptian agriculture. And as an example, Egypt has a tomato disease called tomato yellow leaf curl virus, which is not yet present in California. However, it is present in Mexico, and the potential of it moving into California is certainly very real. The UC-Egypt project, then, provided an opportunity to screen California tomato cultivars for resistance to this disease. In other words, it gave us a chance to get a head start on developing resistance to the disease before it becomes a problem in California. Screening was also conducted on the tolerance of the tomato to high temperatures, particularly fruit set, and for salt tolerance. And we've just experienced the end of a rather intense period of record-setting heat here, where the problems of high temperatures on diminishing crops was seen. It is possible to develop genetic resistance to that stress, and it was possible, therefore, to test it out in Egypt. We are also looking for salt tolerance, which is a problem in Egypt as well as it is here in California.

Therefore, there is an exchange of benefits by participation in international programs. Both partners benefit from it. And I think that is the key for a successful program.

The second responsibility in international programs, in addition to transfer of technology, is institution building. Continuing to use the tomato activities as the example, one of the reasons for the success of the project was the systems approach, which not only liked the research activities of the universities and the ministry of agriculture which up to that time had worked sort of in isolation from one another, it also linked these entities to extension. In this way, the new varieties and new cultural techniques that had been developed by research were transferred to use in the farmers' field. Extension not only provides the opportunity to transfer this information from the labs to the user, but it also serves as a feedback mechanism which identifies problems which researchers should be aware of as they develop their programs.

The success of the Egyptian research linkage in the tomato project and in other or the UC-Egypt projects, including the rice project, has created a much greater awareness in the ministry of agriculture about the essential nature of this extension research linkage. We believe that this is a contribution that will survive the termination of the projects.

The third area of responsiblity is developing human resources or human capital. And this was accomplished by providing postdoctoral and doctoral training of Egyptian scientists at Davis in fields such as horticulture, agricultural economics, food science and technology, and other fields. The training of the individuals in the United States and their use of that knowledge to solve problems in their home country represents a long-term investment in developing nations and which strengthens their ability to help themselves. It also represents a bond of friendship with the United States that lasts a lifetime. This is something we've experienced when visiting UCD graduates in their home countries. Even in Egypt, where they had a time of association with Russia, when we went back, I remember someone saying, "Forgive us, we've learned to speak Russian but we now wish to have—to renew—our friendships with the United States." It is the same type of experience we have had in China, where scholars who have graduated from Davis and survived the Cultural Revolution are very anxious to build ties with the United States. And I think that is a very important contribution that these international programs can make.

In addition to the participation in a project such as I've described, individual members of our faculty participate in the research programs associated with the international agricultural research centers. The first international center, the International Rice Research Institute, which is known as IRRI, was established by the Rockefeller and Ford Foundations in the Phillipines. The success of IRRI stimulated the development of 12 additional centers, and funding is now provided by the Agency for International Development which is responsible for 25 percent of the total costs, the World Bank supplies about 12 percent of the fund, and then other nations contribute the balance of the funds used by international centers.

Each center has a major commodity or theme for which it is responsible. The centers provide information and cultivars not only for the country in which they are located but throughout the world. As an example, the short stature rice was produced in the IRRI and it's used throughout the world. Although there is a substantial amount of variation in the quality and the success among international research centers, they are viewed as major contributors to agricultural development.

Although it is possible to, as I have done, identify highly successful programs, there is still much room for improvement. One is to facilitate communication among the important components of international agricultural development—the universities, the international research centers, and the AID missions. We have proposed, for example, an exchange program for scientists between the universities and the international centers. Also, it was suggested that AID personnel responsible for monitoring the international research centers be encouraged to increase the frequency of their consultations with the agricultural officers of the regional bureaus, to provide them with an understanding of the capabilities of the centers and to obtain their inputs in the evaluation process of the centers. In other words, since AID is investing a major amount—

$50 million, actually—in the international centers, it seemed to us that AID was not really getting the maximum benefit of the output of those centers in their regional missions, and we think there are ways in which they can achieve that.

Finally, funding for international agriculture and nutritional programs within the Agency for International Development's budget should receive, in my opinion, a higher priority. Since 1982, overall funding or development assistance programs within AID, have increased by 22 percent. And funding for agriculture, rural development, and nutrition programs increased by 6 percent. And funding for the Office of Agriculture increased by 3.7 percent.

The Office of Agriculture is responsible for the U.S. contribution to the international research centers, which is 50 million out of the total $82.1 million budget in fiscal year 1984.

The title XII programs, including the seven collaborative research programs, one of which is the small ruminant project, are also funded from the Office of Agriculture as well as research contracts and grants initiated by the AID missions. Clearly, the funding of the Office of Agriculture has not kept up with the increased cost of research. And the results have been curtailance of existing programs and diminished flexibility to fund new initiatives.

One important approach to alleviating world hunger is to increase the capacity of all nations to produce food and fiber in ecologically sound manners, using to the fullest extent existing resources, including human resources. We have spoken about the concerns of the growing population. However, even if the strictest population controls were used, we still have a major challenge ahead of us, because in the less developed countries their percentage of population that is below childbearing age is very high. In developing countries the number of children below age 15 is about 22 percent, less than a quarter. In the less developed nations it's in the range of 44 to 45 percent; so that we have a situation where almost half of the population in less developed nations have not reached childbearing age yet. And, so, we have to take care of that challenge immediately, because population or birth-control methods are not going to make any difference, those hungry people are here. So, I think that we do have to look very carefully at both sides of the solutions, one in terms of concern for population growth, but the other one is increasing our capacity for food and fiber production.

The programs initiated under title XII in the international research centers provide the mechanism for technology transfer, for institution building, and human resource development which can provide sustained returns from the investment that the United States makes in international development, both in terms of economic aspects and, also, in humanistic aspects. And it is an investment, I feel, that deserves a higher priority within the Agency for International Development, and I think deserves the full support of Congress.

Thank you very much, Mr. Chairman.

Mr. Tony P. Hall. Thank you.

RESPONSES TO QUESTIONS FOR CHARLES HESS

QUESTION SUBMITTED BY HON. TONY P. HALL

Question. In your opinion how can we best encourage universities such as Davis to foster the development of mechanical, biological and organizational techniques most needed in LDC's?

Answer. As I have indicated in my testimony and in the enclosed letter to Congressman Vic Fazio, I feel that the best way to encourage universities such as UC Davis to foster development of techniques most needed in LDCs is to strengthen the existing structure for international agricultural development. The Title XII Program, which established BIFAD (the Board for International Food and Agricultural Development) within the Agency for International Development, has had a difficult time in becoming established because it was viewed as being competitive with established programs in AID. However, after a few years and some successes, I feel that BIFAD and the cooperating US universities have grown in acceptance and recognition by AID. But, as I have indicated in my testimony, BIFAD and the Office of Agriculture still do not receive a high priority in overall AID activities. As I indicated in my testimony, funding for foreign assistance programs within AID increased by twenty-two percent since 1982. Funding for agricultural, rural development, and nutrition programs was increased by six percent, and the funding for the Office of Agriculture was increased by 3.7 percent. The funding levels provided have not allowed the programs to reach their full potential. Given the importance of the international development programs to the economic and social stability of LDCs and to our own nation's economy and security, it is appropriate to use federal support for the programs. My suggestion, then, is to encourage AID to give a higher priority to the Office of Agriculture programs, using resources within the Agency, and, once that is done, provide an augmentation of funds directly in support of the Office of Agriculture.

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. What are some of the technologies that could benefit small-scale farmers?

Answer. The technologies that could benefit small-scale farmers vary depending upon the land and climate in which the farmer is located. For example, in Egypt, we were developing a low-cost solar powered pump to be used in irrigation to replace the animal powered pumps. From our experience in Egypt, some of the major contributions that we can make is in the selection and breeding of crops which are adaptable to the conditions of the LDCs which have resistance to stress, resistance to disease, and good productivity and nutritional characteristics. These benefits are "size blind" and benefit agriculture regardless of the size of the operation. The other essential contribution to improve small-scale operations is to be sure that an information delivery and training program be developed to disseminate the new varieties and techniques to the small-scale farmer.

Question. Technologies aimed at the small-scale farmer are often decentralized. In your experience, what is the best way to transfer such technologies? Is it better to go through multilateral, bilateral, or PVO's?

Answer. Although technologies for small-scale farmers are often decentralized, there does have to be a central commitment on the part of the government that such technologies be successfully disseminated. I therefore believe that a bilateral agreement which has the commitment of both governments probably has the best chance of success.

[The prepared statement of Mr. Hess appears at the conclusion of the hearing, see p. 126.]

Mr. TONY P. HALL. Mr. McCalla.

STATEMENT OF ALEX F. McCALLA, PROFESSOR, AGRICULTURAL ECONOMICS, UNIVERSITY OF CALIFORNIA AT DAVIS

Mr. McCALLA. Mr. Chairman and members of the panel, my name is Alex McCalla, and I'm professor of agricultural economics at Davis. My interests are in policy, trade and development, and one of my extramural assignments is as a member of the Technical

Advisory Committee of the Consultative Group on International Agricultural Research which Dean Hess mentioned.

Hopefully, my contribution today will be to put in a more realistic perspective the context within which food and agricultural policy is made in developing countries. I then try to identify more clearly where it is that technical and foreign assistance of varying sorts might or might not be appropriate.

A general statement is that whether a developing country can meet its food needs now or in the future depends on a very complex set of interactions between farmers, consumers, national policymakers, and international factors. Many national governments perceive that in developing policy they can influence all variables. I think it is very important to understand that they cannot. Many times economic analysis is done on the assumption that policy will determine the behavior, for example, of millions of small farmers. Yet, these farmers will behave on their own in terms of their own economic and social interests. Therefore, the policy problem is much more difficult than simply mandating that some level of production be undertaken.

The problem for the foreign assistance donor is even more complicated, because the foreign assistance donor cannot directly influence farmers but may not be able to influence the Government. The second point that I would make, is that the effectiveness of foreign assistance programs depends on cooperation and complimentary actions by developing country governments.

It is important that we all understand the environment within which developing country policy is made and to recognize that single fixes—for example the technological fix, or the population fix—simply don't work unless they occur within a context where there are complimentary actions both by the developing country and by the donor agency.

In my written testimony I present a long laundry list of those things which influence and determine the Nation's food supply, including land, productivity, yield, price, policy and the availability of inputs. In particular I emphasize the question of what role is assigned to agriculture in the developing country. We need to recognize that in many developing countries agriculture accounts for more than 50 percent of the employment and 30 to 50 percent of GNP.

Thus there is an important role for agriculture. The question is whether agriculture is a source of resources for development, either from domestic resources or as a foreign exchange earner, or whether agriculture is a positive engine for growth. The predominant view in most developing countries over the past two decades has been the former; namely, that agriculture should be a source for rapid industrialization and development. Therefore many countries have tended to ignore or place less emphasis on a positive development policy in agriculture.

The determinants of a nation's food needs are population, income level, and rate of change, rural-urban migration and the distribution of income. How these two sets of complex variables—food needs and food supply—come together to influence the capacity of a nation to feed itself. The answer is that they come together in varying mixes between market forces and policy forces. While I doubt we can find any examples of where policy is not influential, the degree of influence is variable.

In the written statement I talk about some experience we had when looking at the Egyptian food strategy question. You have a country with rapidly growing population and very limited land area—about 6 percent of its total land area is arable (the Nile Valley and the Delta). Even though there is a relatively high level of productivity, the food deficits continue to rise. So, the question is, What can we learn from the Egyptian experience?

The first thing we learn from the Egyptian experience is the complexity of inter-relatedness of the policy problem. Agriculture has historically been a foreign exchange earner for Egypt by mandating cotton and rice production, so that they can pursue a policy of urbanization and industrialization. At the same time they have pursued a policy of fixing nominal food prices very low, which, coupled with rapid rates of population growth, rising incomes and rapid rural to urban migration, has greatly increased the food deficit problem in the cities. At the same time, the issue of food prices has become an extremely sensitive political and social-economic issue.

So, as Egypt's population has grown, her output has not increased as rapidly. The dilemma is: How does Egypt develop a food supply? So far she has depended increasingly on international markets, and particularly on imports of Public Law 480 food assistance.

This is a very complex circle. An added problem is the fact that 60 to 70 percent of employment in Egypt is public sector employment, therefore, wage rates are set by the government. If you raise food prices, it would be necessary to raise wages, which has severe budgetary implications.

So, the problem is: How do you break into that circle? How should Egypt deal with the problem of changing the balance between external dependence and internal availability of food? The Egyptians are working on it and perhaps, with our assistance, they can change the policy perspective that would meet their needs more effectively.

I cite this example to show that looking at only a single approvel is questionable. Questions such as: Should we invest in drainage projects or should we invest in projects such as improving tomato yield? Should we do technical assistance in terms of training? Should we provide capital assistance for infrastructure?—context must be taken in context.

All of these are the kinds of things that people can do in the development context, but the messages I'm trying to get across today are that to do any of those without any understanding of context, the very complex policy context, within which that kind of technological or capital change occurs is ill advised. Second, the success or failure of whatever we try to do as an assistance agency will be determined very much by how the host government responds and acts. I'm not trying to be pessimistic, rather my intent is to present the realities, as I see them, of the constraints to foreign assistance. Barring trying to force domestic policy change by tying aid to policy reform, which is what I call the World Bank or the IMF approach, the effectiveness of foreign assistance is very much dependent upon the cojoint domestic policy initiatives by the country. Recognition of this should condition both the nature of assistance and the expectations we have when given programs or projects are undertaken.

I think a final example might make the point—and I'll not mention the country. To provide assistance, technical assistance, to improve the production capacity of broiler production, for example, when neither the incentives, the inputs, the infrastructure, nor the income is available to make the project effective, is not going to do anyone any service.

Thank you, Mr. Chairman.

Mr. **Tony P. Hall.** Thank you.

Responses to Questions for Alex F. McCalla

QUESTION SUBMITTED BY HON. MICKEY LELAND

Question. How can the recent leaps in biotechnology be used to help the small farmer?

Answer. First a caveat. It is unlikely that current developments in the basic science of biotechnology will be at the application stage in the near future. However, when it is, one can say something about the kinds of technology most useful to small farmers. In general, biological technology is scale neutral and comes in small units affordable to small farmers. The most obvious example is an improved yielding seed variety for a staple crop such as corn, rice, wheat, or cassava. Similarly, improvement in genetically transmitted pest and disease resistance is useful. On the opposite extreme would be technology which is expensive and usable only in large units, for example, large scale biogas generators. Overall, biotechnology offers considerable possibilities for small farmers provided that it is tailored to their size, capital limitations, and rotational requirements.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. From a policy standpoint, do you feel that local producers in developing countries need protection from subsidized American agricultural goods which are available on commercial markets?

Answer. If you are talking about subsidized Public Law 480 shipments, I would agree that Government policy should prevent low-priced imports from removing local production incentives. However, the inclusion of the term commercial markets, complicates the answer. If the subsidy is an export subsidy specifically designed to dump U.S. products in their market, than I believe national governments would be entitled to a countervailing duty provided that the country can efficiently produce the product.

Question. Can you briefly outline the benefits and costs which accrue to the recipients of U.S. food aid? Is there a consensus among policy analysts about whether the overall effect of U.S. commodity surplus disposal programs on LDC's has been positive?

Answer. The benefits are obvious—low-cost food for urban consumers, the commercial import of which would draw precious foreign exchange from investment projects. Further, in terms of emergencies, food aid can play a very positive role. The potential costs are that if food aid depresses incentives to local producers it can damage long-run production capacity. Further, if a readily available supply of cheap food is available it may lead to developing countries deferring or ignoring needed long-run agricultural improvement.

There is not a clear concensus that covers all areas. What would be agreed is that food aid can be useful if the complementary domestic policies are properly selected.

QUESTION SUBMITTED BY HON. BILL EMERSON

Question. In your remarks you have stressed the importance of domestic policy reforms which need to be undertaken by the national governments of the countries to whom we contribute development assistance. Would you please outline for us in more detail, the specific measures which the U.S. Government should encourage these governments to undertake?

Answer. The basic choice to be encouraged of recipient nations is that of the role they expect their agriculture to have in providing these food supply. If that role is to expand domestic production, then the crucial policies to be encouraged are:

1. Selection of production of those products which they can produce efficiently;
2. Removal of price and tax disincentives to agricultural production;
3. Consistent, substantial, and long-term support of education for agriculturalists and of applied research programs;
4. Provision of necessary agricultural inputs, for example, fertilizer, improved seeds, et cetera, at affordable prices; and
5. Creation of necessary rural infrastructure.

Of all of these, an appropriate and stable pricing structure which encourages efficient production is most important.

[The prepared statement of Mr. McCalla appears at the conclusion of the hearing, see p. 134.]

Mr. TONY P. HALL. Questions of the panel?

Mr. Leland.

The CHAIRMAN. Thank you, Mr. Chairman.

Dean Hess, in your opinion do you feel the universities are capable, given their limited resources, to efficiently engage in technological projects in Third World countries?

Mr. HESS. The Agency for International Development, in BIFAD, has had a program of strengthening grants which have been designed to help universities increase their capacity for international development. I think that it has to be done, though, in the context that the universities are not able to fund such programs with State resources, that this really is a partnership that does take support from the Federal level as well as from the State level. Part of it is because of the fact that we do have the challenge of meeting domestic needs in terms of hunger and food and fiber production, as well as international; and if we are found to be diverting too much of our resources to the international scene, then we get into difficulty with our constituents and with the legislature here in the States.

So, I think that my answer is, the capacity certainly is there, but it has to be recognized that it requires support in order for that capacity to be fully utilized in overseas activities.

The CHAIRMAN. Dr. Robinson—have universities addressed the fundamental question of how they can best contribute their expertise to the international realm?

Mr. ROBINSON. Well, I believe there's been a very great change in that over the last 6 or 7 years, and some of the programs that Dean Hess alluded to would speak to that; particularly, for example, the title XII programs, whereby the universities have been asked to specifically match the resources of the Agency for International Development in the development work, and, in fact, have done so. And I believe that that is a major shift in attitude; it commits the universities, it commits the educational institutions. And in our first title XII programs that we saw on this campus, we saw the commitment of our best and our hard core faculty with programs in Egypt, Kenya, Morocco, Peru, and so on. So, I believe that the consciousness of universities has been raised very substantially in the last few years.

The CHAIRMAN. Dr. McCalla—do you feel that U.S. extension services are appropriate for less developed countries?

Mr. McCalla. You mean at simply modeling the kind of extension activities we have here and transferring them to developing countries?

The Chairman. Exactly.

Mr. McCalla. I would think that we've probably learned over the years that that sort of institutional technology transfer without change is not the right way to go. I think the notion of linkages between teaching activities, research activities, and extension activities, so that in some sense you get interchanges of information and problem identification, is important. But I think the land-grant triumverate of teaching, research and extension is a unique institutional evolution of U.S. history, and to simply pick it up and put it someplace else is not appropriate.

Let me make one other comment, too, and that is that I think our early experience in aid was that we thought we could simply, by taking an extension activity to a developing country and our technology, transfer the technology. The evidence is overwhelmingly strong that that does not work, that developing countries must develop the capacity for adaptive and increasingly applied research to make any extension service in that country effective.

Mr. Hess. Mr. Leland, may I speak to that question, also?

The Chairman. Sure.

Mr. Hess. One of the major differences between many foreign nations and the United States is that the extension service in foreign nations is associated with the ministry of agriculture and has dual responsibility of information transfer and regulation. And the problem is, when a farmer sees an extension person coming into his field, he is not sure whether he's going to get information or be regulated. And being wary individuals, they fear the worst and look with concern as to what information is being disseminated.

And that is, I think, a pity, in a way, because I think the strength of our land-grant system has come from the fact that there is the interaction with the extension specialists, or farm advisors, or county agents, with the faculty who are involved in the research and teaching; because, as I said, there's not only a system which disseminates information, but it represents a feedback mechanism that makes people conscious of the problems, and, therefore, it helps make a relevance of research to the needs.

I agree 100 percent with Alex, that you can't go into a country and say, "This is the way it should be done;" because you have tremendous political turf battles that are involved. I think the success, however—the way to do it, is as was done in Egypt. Dr. Sims is an extension specialist, and I think by his example and the results of the projects in which there was this linkage has created a whole new awareness of the strength of that linkage. And I think, then, the country has to work their own system out, so that they get the benefits of these linkages. So, it's definitely not a direct transfer of technology or structure, but if you can show how it can work in their country under specific examples, and then let them work their own system out, that's the way I think we can accomplish the benefits of that—the benefits of our tripartite system.

The Chairman. Let me throw a question out to all of you:

What are the incentives for universities in general, academicians in particular, to engage in projects overseas, expecially under title XII grants?

Is the United States sending the best and brightest?

Are younger faculty members an active contingent in these projects?

Mr. Hess. Let me take a first cut at that.

I know there is a perception that there is a problem in terms of encouraging particularly younger faculty to go overseas. Part of the difficulty is the younger faculty is in a state of his or her professional development, in which they have to develop research skills, and teaching skills, and so forth, and participation in international programs often puts a person in an environment where it is difficult to do that. Problems of just getting things done, because of language differences, because of the infrastructure that exists in the country, adds months to a project which could be done in weeks here. And, so, there is a risk, and, in some cases, as faculty are reviewed by their colleagues, if there hasn't been examples of intellectual development, of professional accomplishments as evidenced by research and so forth, they may not advance as rapidly in a system as a person who had stayed.

Here at Davis, we've been working on that. We have said, as a policy in the college, that we recognize international participation as a valid component of a person's activities. But it takes a long time before that concept is, in fact, fully developed. And, as I described, it's very difficult because of the conditions that exist, for research and teaching in international locations, so that there is that problem.

The other one is, there's a problem overseas; that is, in Egypt the government and the universities were somewhat skeptical of younger people, of graduate students, for example. We thought that it would be very nice, in terms of our graduate students who are in international agriculture development, to have such an internship over there and that it would really strengthen their program here. The Egyptians like to see gray hairs on folk; that is, they want a person who is a mature scientist, who is really going to contribute—or perhaps no hairs. [Laughter.]

And, so, there is a problem on both sides which I think we have to work toward solving.

Mr. Robinson. Let me just speak from the experience of the small ruminants CRSP. This is a program that we undertake with 10 other universities across the land and 5 countries overseas. And I can say, unequivocally, that in those programs each university that's participating has put the very best of its faculty forward. Of the 13 collaborating scientists we have, all of them are above associate professor rank, 3 of them have become associate deans of international programs following their appointment to the CRSP work, and they have appointed 20 postdoctoral people, which we now have overseas. At this moment in time, over the length of the program, we placed over 40 postdoctoral people overseas. And Dan Brown, the fellow who you met at the goat facility this morning, is a good example of a young scientist who became a postdoc in our program and has now moved right on to the faculty in a major university.

And then, of course, we've had a real change in our attitude, apropos appropriate research of developing countries, in that now U.S. students can go overseas and do their thesis work in developing countries and developing country scientists can actually do their thesis work, also, in their own country. That is quite a change of attitude over the last few years in many of the universities that we work.

Mr. McCALLA. Let me just make two comments.

I think that, in general, there is a mixed experience in terms of the quality of people that have been sent overseas. And I am making that as a more general statement nationally than necessarily with respect to Davis. I think there was an error in overseas assistance programs when what I would call double hiring was a standard. When AID assistance came to a university, rather than sending their own faculty, they tended to hire new and young faculty and send them abroad. That had two difficulties: One is, there was no institutional linkage with the institution by the people involved; and, second, they were not necessarily always the highest quality of people. One cannot say they're always poor or they're always good, it's a mixed performance.

Just to add a bit to Dean Hess, as a former administrator and now a working scientist, I think there is a professional issue for the faculty involved in development. When working in a developing country, one has an additional set of responsibilities that are not necessarily part of the ongoing formal teaching activities at a home campus. This is what I would call collegial and institution building on a one-on-one basis as you work with your counterparts in developing countries. That's a slow process. It's something for which there is no tangible evidence of what's happened, except, perhaps, 10 years later, and it's time consuming. So, it is an issue in terms of the reward system.

I used to think the best people to send overseas were bright, young assistant professors who were tuned in to the issues. I now think it is potentially very damaging for them. You do want to send people who are well established professionally, who have a range of experience, and who are not under some sort of immediate tenure gun.

The CHAIRMAN. Thank you.

Mr. Chairman, I have more questions, but I know, because of time restraints we can't ask all of them. So, I would like to submit the rest of the questions, for the record, to the gentlemen for response.

Mr. TONY P. HALL. Without objection.

Mr. Emerson.

Mr. EMERSON. Thank you, Mr. Chairman.

Dr. Robinson, did I understand you to say to the effect that developing countries are using their development priorities in such a way as to take land out of production?

Mr. ROBINSON. What I was referring to there are the areas of the world which have been, traditionally, the great supporters of agricultural production, areas such as, for example, the Indus Valley area, the Nile Valley area, you might even add the San Joaquin Valley area, which through periods of overuse are now literally being taken out of production. In Pakistan it's a very serious problem; loss of irrigation land there is about 5 percent per annum, which gives them a very short lifespan on one of the major production areas of the world.

Mr. EMERSON. Where are the conflicts in their priorities that are bringing this about? If they are taking it out of production, what is happening?

Mr. ROBINSON. Well, it's not so much being taken out of production, as, for example, with waterlogging, saltation——

Mr. EMERSON. It's no longer capable of production.

Mr. ROBINSON [continuing]. Such as those, no longer capable of production.

Mr. EMERSON. I understand.

Mr. ROBINSON. Then you see people opening up—the hillsides in ever increasing amounts, the surface soils, the range lands, and the watersheds being eroded, and the irrigation systems being silted out.

Mr. EMERSON. I would like to pose a question to any or all of you: I think we have a very elusive situation here, with the problem of agricultural surpluses in this country and people starving in the world. And, very clearly, we should be able to help by providing these commodities for development and for emergency situations. How can we best target our food-aid programs to benefit those groups in need, and also, at the same time, complement the domestic policies of the recipient government?

I know we also have transportation and distribution problems involved here. I would welcome the wisdom that any of the three of you may care to share on this elusive problem.

Mr. MCCALLA. The economist always gets the first crack to say on the one hand or the other.

The question of food aid is one that, in the literature of development, has been lively debated and both extremes have been cited as valid examples of why it is terrible and why it's excellent. The reality and the usefulness of food aid is somewhere in between. Again, it comes back to my comment on cojointness. It really depends not only on what we do with it. In other words do we target it? Are we giving it on the basis of need or are we giving it as an element of political reward? Or are we taking it away as an element of political penalty? Everybody agrees, with emergency food aid, that the availability of stocks and resources to move into natural disasters either through the World Food Program or bilaterally, is useful, desirable, necessary and beyond question.

The question really arises on that food aid which is targeted in some sense as a component of the development. If the country receiving food aid uses the food aid to depress domestic prices so that they can maintain low consumer prices, and, therefore, damages incentives to producers, then I think food aid is deleterigus to the countries longrun production capacity.

On the other hand there are cases, such as the way in which Brazil used food aid for a number of years, where they took the food aid, sold it at a slightly higher price than they paid for it from the United States and used the returns to pay incentive prices to producers. This greatly expanded wheat production under the impetus of food aid. Colombia did exactly the opposite, let prices fall;

and Colombia's self-sufficiency ratio in wheat dropped from 75 to 20 percent in 10 years.

The answer is that it requires tailoring of the nature of the food-aid activity to the policy situation of the country, to be sure that it does not either damage incentives to production domestically or allow the country to defer attention to long-run food production capacity. In some cases in the past it's done both.

Mr. EMERSON. Thank you very much.

Mr. ROBINSON. Not being an economist you can imagine the difficulty I have with this question. It seems to me, though, that farmers, through no fault of their own, do not really grow food with the objective of feeding people when they grow it, they grow it for cash; and they can't be faulted for that.

I agree with everything that Alex has said. I might just add one or two other things, things that we see sometimes as we travel around, and that is that with all our intended generosity to some of the developing countries with the Public Law 480 program, you do find situations, for example, where you actually change dietary habits, the things that we give to the people they prefer. Nigeria is a good example. Very few people ate wheat in Nigeria. We began giving our surplus wheat to Nigeria, and now Nigeria is hooked on wheat and will be, in fact, dependent rather than independent. And, so, I think that is a problem.

I might also say that I think perhaps, given our wealth, we could be a little more philanthropic in our view of the way the Public Law 480 funds are used. For example, there is a ban on the use of Public Law 480-generated food to do any kind of research or development in the oilseeds. The oilseeds are a crucial commodity for some of the countries and they have to import them from us. I think maybe we could expand our largess somewhat and take away those kinds of restrictions.

Mr. TONY P. HALL. Thank you.

Dr. Hess, you mentioned increased production achieved in the Egypt program. This is a hunger committee; we're trying to understand how these programs work.

You spoke of increased productions as a result of a program in Egypt. What are the specific benefits of increased production to the poor? Of what benefits to the hungry people are the projects that you have talked about? What are the poor deriving from them?

Mr. HESS. In the particular example I've given, the technology that was developed in varieties of food, insect control, better management of water went directly to the farmers, to the score of farmers; and they benefited directly by being able to increase their production from, as I said, about 7 tons of tomatoes per feddan to 20 to 30 tons. That gave them a higher level of income. It also resulted in a product that reached the consumer in a better condition. There was also marketing studies, and food processing studies, and so forth. The total system was looked at; I just gave the one component as the example.

With the higher income, of course, that made it possible for the small farmer to purchase other needs for the family. I think that the examples of development of improved varieties which are disease resistant, are more efficient in their production, and can be made available through proper outreach programs to the farmers, themselves, does benefit the poorest of the poor as well as the intermediate level grower; because those varieties that increase productivity are of direct benefit to their income and for their own consumption.

Mr. Tony P. Hall. Thank you.

Mr. Fazio. I know we have to move on. I probably missed some responses that I would have enjoyed hearing when I was outside.

Dave, you have a sentence here: "Governments often, posing as generous donors to the needy, pursue policies which guarantee the perpetuation of hunger." Were you answering, essentially, when I came in, a question Bill Emerson must have asked——

Mr. Robinson. No, I don't think so.

Mr. Fazio. Do you want to touch on it a little more in detail, then?

Mr. Robinson. I guess you would call that a macro view of the problem. I sometimes get the feeling, actually, when we do discuss in minute detail components of AID's budget, that we're really talking about very big issues with very small change. Because one fraction of a percentage change in some of the other components of the things we spend our money on would obviate all of the discussion that we would need to have on intricate details of AID's budget. And I think, therefore, that what I was addressing were the large Government policies, our expenditure.

Someone, this morning, said we'll have to cut and trim somewhere else, because the problem is perceived to be large enough that we have thrown more money at it. That's exactly what I'm talking about. It seems to me that we can afford to cut and trim many aspects of our budget, particularly the defense budget, to be quite frank with you, to support these programs in world hunger. But we don't do it, and therefore we tend to pursue macro policies; but, in fact, while we talk in the minuet of solving world hunger problems we overlook the big bang.

Mr. Hess. I guess I just would amplify that by mentioning that the Office of Agriculture in AID, which provides 25 percent of the funding for the international research centers, funds all the title XII programs plus other contract research and grants. The total budget is $82 million. And I think what Dave is saying is that in terms of the total investment that's made, it is really is a rather small one and that a significant increase in investment will have great returns. As an example in Egypt, the tomato project, as I've indicated was part of the the total Egypt project which cost $15 million. It came from funds other than the Office of Agriculture. And that one introduction of technology and institution building and so forth, that Bill Sims was responsible for, is estimated it will return to Egypt about 161 million pounds, which, on today's market, is about $161 million. So, it is almost a tenfold return on the $15 million investment in that one project, itself. And that, you see, I think provides, then, capital which helps the small farmer, the people out in the Fayoum area, for example, in Egypt, to increase their income so they can buy other commodities which are necessary.

I think that, also, as we help these nations become more self-sufficient, they can then become consumers of other products that we produce and help offset our balance-of-payments problem. So, I think that that's an investment, too. It's a long-term one but one that is a very important one.

Mr. FAZIO. What are we doing to develop more support in our domestic agricultural industries for these programs?

I heard earlier today of the benefits of increasing the breeding cycle of goats based on what we learned in Morocco. We heard you talk about the yellow leaf disease in the tomato industry that may be coming to us from Mexico. Are we emphasizing the benefits to domestic agriculture of involvement in international programs?

And are we getting any response? Because, let's face it, they have some political clout, and if we're going to find increases in this area of the budget, it may come more readily if we can show them the justification for the investment.

Mr. HESS. It is difficult at this time, when you have a situation because of the high value of the dollar, it is difficult to export or sell our products on the international market. As you know California exports about 1 acre out of every 4 that is grown, and in the last several years that market has diminished considerably. And, in fact, in the wine areas, we're seeing more foreign wine come into California. And, as a result our agricultural constituency, they view international programs with some degree of concern. They are saying, "Are you not, therefore, increasing even more the ability of other nations to ship products into here or become self-sufficient so that we don't have a market?"

I think that is a shortsighted view. I think that, as I have described, that as we help increase the economic stability of less developed nations, they can then become consumers of other products.

We also have—I think it is critical to have—this exchange of knowledge and information in germ plasm among developing nations, because they directly benefit our agriculture. In fact, much of our agriculture is based upon germ plasm that has come from overseas. But at this time, when you're in this economic situation when you're having difficulty exporting U.S. commodities, the ability to get support for international programs from a constituency which is normally very supportive of agricultural research, is difficult.

And I think we have a responsibility to try to inform people that our work in international programs is, in fact, a benefit both ways; in addition to the humanitarian effects, the reduction of hunger, there are also very important economic and even political aspects that are part of it and, I think, make that investment worth while.

Mr. TONY P. HALL. We need to move on. I wish that we could spend a whole day with you. There are a lot of questions we would like to ask. We have enjoyed your testimony and we thank you for being with us.

We're going to have to move on to the next two witnesses. If we could we would like to bring the next two witnesses together and have them give their testimony.

We have Dr. Tony Hall—a very famous name—and Dr. Charles French. Dr. Tony Hall is professor of plant physiology, the agricultural experiment station, University of California at Riverside. Dr. Charles E. French is the director of the Institute of Agribusiness at the Leavy School of Business, the University of California at Santa Clara.

Dr. Hall.

STATEMENT OF ANTHONY E. HALL, PROFESSOR OF PLANT PHYSIOLOGY, AGRICULTURAL EXPERIMENT STATION, UNIVERSITY OF CALIFORNIA AT RIVERSIDE

Mr. ANTHONY E. HALL. Members of the Select Committee on Hunger, ladies and gentlemen. I am going to focus on the mechanisms whereby universities in the United States can more effectively contribute to improving agricultural systems for poor farmers.

The opinions which I will express should not be considered as representing an official position of the University of California. They are, indeed, my personal position, based on work in agricultural development in Africa, at the field and governmental level, since 1961. I also have some experience of California agriculture and the University of California, since I have been a professor here for 13 years. Even though these are my own opinions—because I was not asked by the university to speak, I was asked by this organization to present testimony—I would comment that I do agree with the major points made by the previous people.

I will discuss the relative merits of three mechanisms whereby universities can work in agricultural development in developing countries.

The first mechanism, strongly used in the past and, to a certain extent, in the present, involves contracts, and the direct involvement of professors in agricultural development. In the past, at least, it also assumed that U.S. technology and expertise would somehow work very well in radically different environments. But I feel that this mechanism has some problems, especially with respect to application to the development of farming systems for poor farmers, small farms, and tropical environments.

In many cases contract involvement is not directly consistent with the role and responsibilities of the professor and the university, and professors who are stationed overseas for extended periods do meet trouble with the University of California with respect to professional advancement. That is something that really needs changing on our end.

Another problem is that the types of research and training required by these contracts, that are relevant to the conditions of poor farmers, are frequently not the types of research and training that is being done at major universities or that is considered as desirable with respect to professional advancement.

The take-home message is that university involvement in contracts, and direct intervention in agricultural development is only appropriate where professors have the appropriate expertise and where they are available. And this tends not to be as many circumstances as one might think at the outset. But obviously, a case was presented of how the University of California at Davis has had tremendous impact with respect to tomatoes.

The second mechanism that I would like to discuss was one which was, in fact, established after title XII was enacted. And it involves, I assume, long-term collaboration between research scientists and extension workers in U.S. universities and in developing country institutions. And to my view the main thrust behind this collaboration is an attempt to help people to help themselves. I feel that ideal opportunities for productive collaboration exist, where cooperative research can be conducted both in the developing country and in the United States by a team of university and developing country scientists, where they have certain common objectives and where the output of their work benefits both the developing country and the United States. One advantage from the U.S. side is that the U.S. scientist is more closely tied in to the university and is able to continue to maintain the support of the agricultural sector in the United States and of the other members of the university.

The collaborative research support programs established under title XII can also provide very effective mechanisms for training personnel from developing countries, because if they do graduate training in the United States, their research can be really geared to the problems that have to be addressed when they get back home. Also, under the collaborative research support programs, funds are supplied to both the U.S. university and to the host country institution, and these funds that come to the United States can be used for appropriate research which provides a very good environment for training personnel from developing countries.

I feel that this is one of the first and major priorities of assistance programs, training personnel—and not only just in the formal sense, in its total complexity—and the establishment of effective research and extension teams in developing countries, run by developing country personnel. That is where the answers will come from, not from technology transferred from the United States by expatriot personnel.

I have been involved as a principal investigator of a project of this type for 4 years, and I have found it to be a very exciting and fulfilling experience. I have also worked with members of other projects on the same CRSP. It's the Cowpea-Bean Collaborative Research Support Program. I presently work on the technical committee, and I assure you that they are attracting some of the best and most active scientists in the United States. And I've seen changes in these scientists over the last 4 years. When they first came in, some of them were somewhat inexperienced in international development. I think they were in it for the good of their hearts. But after a year or two, getting involved, they are now beginning to develop a true commitment, expertise, and ability to really contribute.

I would point out that the project that we've been operating has produced some advantages for both California and the country that I work with, which is Senegal; here, again, in terms of improved crop varieties. I'm working with cowpea, which is a modest crop in California. It had its origin in Africa, so there's tremendous diversity of germ plasm. I've been able to obtain cowpeas, for use in breeding varieties for California, which have useful characteristics such as heat tolerance and insect resistance from my colleagues in Senegal.

The third and last area with respect to mechanisms that I would like to consider also involves collaboration, and in this case, it's in research, between U.S. universities and the international agricultural research centers—places like the maize and wheat program in Mexico City, as mentioned earlier the rice program in Los Banos, and the cowpea program in Africa. These international agriculture research centers receive a substantial amount of funding from the United States, and I think they're one of the most effective mechanisms for agriculture development in developing countries, and, also, for meeting the needs of poor farmers. But these centers can be helped by closer collaboration with U.S. universities which are doing the supportive, fundamental research which is necessary for long-term progress in agricultural development. To a large extent the international centers cannot do more fundamental research, they have to focus on short term and applied research; with the exception, of course, of plant breeding, which is always long term.

Closer collaboration would not only enable the international centers to do a better job in developing countries, but it would ensure that the scientific advances made at the international centers are available to U.S. universities and U.S. agriculture. To a large extent our wheat industry in California, over recent years, has depended upon varieties coming out of the maize and wheat improvement center in Mexico City.

Now, I would like to make a final comment—and I do believe it is important—and it concerns the type of expertise that we need in U.S. universities for solving problems confronting agriculture in developing countries. And in many, many cases the sort of expertise we need is in field-oriented research. In recent years there's been a tremendous amount of advertising, pressure, what have you, on modern molecular approaches to plant breeding. It is my personal experience as a somewhat practical plant breeder and agronomist, that the claims on what molecular approaches can do are being substantially exaggerated, and that it is far too speculative to warrant inclusion in collaborative projects with developing countries. Molecular genetic engineering has been funded at extremely high levels in recent years, compared with the funds coming to field-oriented plant breeding and agronomy. Yet to my knowledge, molecular genetic engineering has provided little of direct value for crop improvement. And at most, in the future, I view it as only acting as a supplement to field-oriented plant-breeding programs.

Now, genetic engineering can provide fantastic opportunities through microbial systems for drug production, things of this type. With respect to higher plants, we have to combine many, many genes, and much conventional plant breeding is necessary if we are to develop varieties that are acceptable to farmers.

Genetic engineering can help, especially in improving the basic knowledge on which plant breeding is based, but I do feel that we have to redress the balance, the shift away from the field, which has happened, to molecular approaches. We need a balanced approach. We need more funds; not for traditional field research but for aggressive, innovative field research that does use modern advances. And I would suggest that this would not only enable U.S. universities to better assist agriculture in developing countries and poor farmers, but more emphasis on field-oriented research and more support for it would also be important for U.S. agriculture. I think there has been some errosion in our capability for field-oriented research; especially you can see it in the younger faculty, many of whom now are taking the molecular approach.

Thank you.

Mr. TONY P. HALL. Thank you, Dr. Hall.

RESPONSES TO QUESTIONS FOR ANTHONY E. HALL

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. What are some of the technologies that could benefit small-scale farmers?

Answer. Improved varieties of traditional crops are particularly useful for small-scale farmers, especially where farmers can produce their own seed, for example, self pollinated crops or open pollinated varieties but not hybrids. The ideal case is where the varieties will give higher yields under traditional low-input management methods because this technology only has small or negligible costs to farmers and can be easily adopted. In addition, new varieties can be used as a catalyst to encourage farmers to adopt additional beneficial practices and help them to get the cash to buy the inputs that can substantially increase yield. Simple machinery, for example, animal draft cultivators—and the capacity to repair them at the village level, would also be useful in some of the poorer areas.

Question. Technologies aim at the small-scale farmer are often decentralized. In your experience, what is the best way to transfer such technologies? Is it better to go through multilateral, bilateral, or PVO's?

Answer. The transfer of technology to small-scale farmers requires substantial on-farm experimentation and demonstrations conducted by dedicated national program staff who have been given the resources and training needed to get the job done. The USAID missions are the best organization for overseeing the planning and execution of projects for training and assisting national extension teams, through bilateral agreements. PVO's are probably more suited for providing assistance in more visible and straight forward tasks like famine relief and medical assistance. Multilateral funding is effective for long-term research projects, such as the plant breeding conducted by the international agricultural research centers which can benefit many countries.

Question. What is the relevance of U.S. agricultural research and development to the Third World?

Answer. At the hearing at the University of California at Davis I said that U.S. institutions can mainly help the Third World by doing backup research. By backup research I mean the research that can be most effectively done in the United States and that can obviously help either national programs or international centers. It should involve solving specific production constraints identified in developing countries, and it should be conducted in close cooperation with national programs and international centers. I have attached a report on my research as an example, and a letter by the ADO USAID Senegal concerning the relevance of this research.

NOTE.—Material referred to retained in committee files.

Question. Could you describe some of the problems LDC's have in adopting new technologies?

Follow-up: Could you describe some solutions to these problems?

Answer. The main problems are ineffective national research and extension teams. If appropriate technology is developed, and tested and demonstrated on farmers fields—a high proportion of the farmers will adopt it. National program staff often work in conditions which do not foster dedication and motivation. We need to work with them as friends and collaborators, not as technical assistance experts or expatriot bosses, to help them get the training and resources, and encourage the dedication that is needed to get the job done.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. What do you see as the major limiting factor to increased food production in, for example, Senegal?

Answer. Looking for major limiting factors is practical but it can lead to oversimplification of complex problems. In subsaharan Africa, inadequate economic incentive is a major factor which acts to stop farmers from producing more food than is needed for their families. Prices for staple food crops are either too low or too uncertain. Farmers with extra land and production capacity tend to grow an export crop such as peanuts or cash crops such as onions or cotton that can be sold on local or international markets. More stable and higher prices are needed for locally produced staple food crops, such as sorghum, pearl millet, corn, and cowpeas.

Question. Given the successful development of heat and drought resistant crops for use in Africa, what kind of research and investment in related production and marketing activities would be necessary before the benefits of these new varieties could be realized?

Answer. We are not only developing drought and heat resistant cowpeas as described in the attached paper Research Highlights. My colleagues in Senegal are developing improved management techniques, including use of fertilizer, insect control, and storage methods. We are attempting to develop total improved systems. The major limitation to wide scale adoption is the need for more on-farm testing—refer to the letter from John Balis ADO USAID—which we have begun to do this year. Another major limitation in Senegal and most countries in Africa is the need for stronger extension agencies. The USAID mission in Senegal has been doing excellent work attempting to strengthen the extension agencies and should be given greater support. The research approach taken can have a big influence on the possibilities of adoption. We are developing improved minimal input production systems that can be easily adopted by farmers.

NOTE.—Material referred to retained in committee files.

[The prepared statement of Mr. A.E. Hall appears at the conclusion of the hearing, see p. 140.]

Mr. TONY P. HALL. Dr. French.

STATEMENT OF CHARLES E. FRENCH, DIRECTOR, INSTITUTE OF AGRIBUSINESS, UNIVERSITY OF SANTA CLARA

Mr. FRENCH. Mr. Chairman and distinguished members of the Select Committee on Hunger, it is my pleasure. I would like, with your indulgence, to correct the record on my institution—a very common way that I am introduced—as a part of the University of California. And that is a very privileged introduction but it is not quite accurate. I am with the University of Santa Clara, which is a Jesuit university located in Santa Clara. And, incidentally, we are quite interested in this subject, and we are having a university-wide institute on hunger at our university for the full winter quarter. It's early next year, and I would invite any of your committee, and I know that one of your distinguished members, Congressman Panetta, is hoping to be with us for part of that.

I know that your time is short, and I would like to say that I also endorse very substantially the things that my good colleagues from the university here discussed previously. I would say that I think they are just a little bit timid in terms of two or three areas of emphasis with regard to the importance of this type of work. I speak from a point of 5 years experience in a similar university, Purdue University, where I had a lot of the same experiences and shared some of them with them. Also, I have seen the university programs from the Federal agency point of view, as having major responsibility for interacting with them. And I also had a chance to have input into the executive branch policy decision in three administrations, including some positions where I was representing the White House.

And I would say that we should not forget that, as was pointed out very forcefully in your opening comments, the hungry of the world tend to be the poor. But we also should not forget that the poor tend to be the agricultural people of the world. That's where the poor are located, for the most part. Not necessarily the most acute hunger, but the basic hunger is very pervasive in the poor or the rural communities of the world. And if we're going to solve this problem in the long run, I think the arguments we've made are very forceful, that you have to use agricultural development, and you help the people pull themselves up. And certainly, the lubricant of this system is the food for all, and that comes from the straight, direct improvement of agriculture.

But the thrust for economic development in these countries and the overall ability to get some money into these pockets so that people can get some food generally is also coming from agriculture. That, I think, was not necessarily forcefully put forward in the answer to your question; and I would have all the regard in the world for my friends, but I would like to add that to what they said, but based on an endorsement of what they said.

My comments are going to be very brief this morning. I have a paper for the record, and also suggested some homework in that paper with a couple of reports that I think might be useful to you that backstop that paper. But what I would like to say is, with regard to the private sector and the kind of educational programs that are directly affecting those people that manage it, that part of our agribusiness food structure, that happens to be the business I'm in now, and I'm in a program where we train young people, both foreign nationals and U.S. nationals in the management of agribusinesses specifically and I think I know what's going on in that area. So, I believe I have something to add to the record in that area, and my paper speaks primarily to that.

The institution building that was referred to by the gentlemen ahead of us, and its resilience to whatever ideological undergirding that may be in a country at any one time, is one of the beautiful things to observe, as they've said; and I have had the opportunity. But also, as was indicated, the personnel and the resilience of the good professionals around the world and their resilience to stand, and to persist, and to do a good job over time is also very, very valuable. So, I have a bias that helping train people and get the effective kind leadership is terribly important.

The ones of us that have been associated with land-grant universities and other universities, and have seen the good universities stand around the world and continue to do good, are very impressed. It's not so clear in the private sector. In the private sector we have nationalization of those organizations and so forth, so it doesn't always come in. So, my comments deal particularly with that.

Let me say a little bit about the world hunger thing as it affects directly the private sector involvement. The world hunger problem, as I see it, is one that's a little more solvable than many of my colleagues would argue. I am basically somewhat of an optimist on this problem. My optimism comes from several things that are somewhat fortuitous at the moment, but I believe they're all contributing. That optimism comes from the fact that the scientific community right now is leaving no doubt that we can solve this problem from a technical point of view, that the technology is available, that it can be made available. That is a new thing. That was documented by the National Academy of Sciences in a report which they did for the White House following the World Food Conference in Rome in 1974. And the ones of us that worked on that, I believe, were completely convinced that the scientists had a case to be made.

Second, there are a lot of ways that we're getting food on the agenda around the world. And as you men well know, you don't solve very many political questions until you get them on the agenda. This issue is on the agenda, and that, I believe, is really a basis for some optimism. And your committee is to be congratulated for being in the middle of this right now.

Third, I think that things sometimes have to get a lot worse before they get better. We've gone through the North-Soutn debate in a pretty positive way in many ways, and as a result of that we now have dialog and we have interaction in the international forum on agriculture that we've not had before. And we have a set of selfish concerns from a lot of the countries around the world that are bringing about a most effective mutual effort in these areas. I developed that in my paper, that basically we're in a world now where you cannot get along unless you do some of the things that upgrade human dignity. And the main way that that's being approached right now is working on the agricultural problem around the world, because the tremendous growth in population around the world is in those areas where we have substantially agricultural societies. And that's where the effort is.

There are some other reasons I'm basically optimistic about that, but those are the ones that I would really argue.

Now, with regard to the private-sector involvement specifically, I had two experiences that I'd like to call to your attention. One, the World Food Council, of which the United States has been a member, has done a lot to be a catalyst in looking at the food sector in many countries of the world, and particularly in strategizing on how that could be done. And the United States has given a lot of leadership to that. In that leadership role one of the things that we learned in this country was that the private sector was much involved in many of these countries in bringing on an advancing agricultural situation than we had thought.

Second, at Cancun, at the summit meeting, President Reagan offered to send a task force or commissions to any place in the world in which a chief executor officer asked him to do so. I had substantial responsibility as a point man on deciding on whether we should go in several of those, and actually served on a Presidential commission in two of them. There was one overpowering thing that came out of those, as far as the ones of us that observed that was concerned, and that was the problems that were of high priority in those countries as delineated in this agricultural area, quite often dealt with the private sector, either in education for the private sector group, management training, or else the developing of marketing, so these farmers, particularly poor farmers, as they developed their better standard of living, their better production, they had a market in which they could move it. There were a whole range of other problems, but basically those issues with regard to the private sector were very much there. So, the prevasiveness of private-sector involvement in this food problem around the world, in those two instances in which we had public-policy programs abroad, were very obvious and somewhat surprising to many of us that had been the business for quite a while.

In addition to that you have the thrust, now, of the impact of trade, which has been so very difficult for the U.S. farmers. You also have the evolving trade of the developing countries around the world. The primary increase, and, as a matter of fact, the exclusive increase, in our agricultural exports in this country, in the last 5 to 6 years, has come from the former developing countries that we have helped with these kinds of programs, that are now buying from us. And that is causing a lot of private-sector involvement in the area. We still have a lot of governmental trading, but there's a lot of private-sector involvement in that as well.

This emphasis on private sector is suggesting to me that there are certain things that we could do to improve our educational programs. And we would like to bring those to your attention.

First, there is needed some kind of a study of real stature to learn about who is running this current food system, both in this country and around the world. The ones of us trying to educate and do the kind of things that you've heard talked about on this campus for the agricultural scientists, are trying to do it for the business side of this agricultural establishment, have a very difficult time establishing the kinds of people that are really needed both in this country and abroad, and where that kind of training can best be oriented. So, this type of thing I would call to your attention as being something to consider in your overall program planning.

Second, the programs for training U.S. nationals in the agribusiness management area in this country is one in which we need a certain amount of emphasis and a certain amount of support. The number of people that are moving into the foreign private sector in the agricultural section that need good management is increasing substantially. There are a few schools being started abroad to do this job. These schools need good training, so we need to look particularly at where, in our graduate programs in this country, we should support this type of activity.

Third, there is a growing need for improved materials for teaching in this area, and we need strength in that area.

One of the things that some of us observe around the world is opportunity now for some good short-term training and education in the field. We have more language capability abroad, we have people that understand the United States, and we now can get a type of overseas training in residence abroad that makes sense and is much cheaper than bringing a lot of the foreign nationals here.

I don't want to belabor this more, but I am trying to make the point that there is great optimism in this whole business of world hunger approach. A lot of it hinges on certain things that can and must be done through private sector means with support of the institutions of the Government, and of education, and so forth. The education component in that area has not had a natural home. Business schools have given very little support to it, and the agricultural schools have been very busy. Some of the agricultural schools, including Purdue where I was, have had very good programs. Davis has had a very good program at the undergraduate level. But that whole level of agribusiness-management education and the research to back it up, and adult-education extension programs to help these people in the private sector abroad, have not been as forthcoming as some of the other areas, and now it's my privilege to have a chance to call that to your attention. Thank you.

Mr. TONY P. HALL. Thank you very much.

RESPONSES TO QUESTIONS FOR CHARLES E. FRENCH

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. It has been said that when major effort was made to enlist the participation of agribusiness corporations, the results were meager and had little effect on the crisis of hunger and poverty.

Do you believe this is still the case?

Answer. No response received.

Question. Would yo agree that the actions taken by private concerns, has taken too long to filter down to the poor in less developing countries? If so, why?

What steps can private industry take to assure that the poorest of the poor benefit from projects that take place in their communities? And what are the most beneficial types of projects might private industry undertake?

Answer. No response received.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. In training students at universities, what would you consider the one or two areas of emphasis that would be essential in their academic careers?

Answer. No response received.

Question. It has been said by the 1980 Presidential Commission on World Hunger, that corporations in LDC's can have either a positive or negative effect. In advocating private industry involvement, would you agree that some firms have converted valuable agricultural land to the production of products which poor people in LDC's usually cannot afford to buy? In addition, it was sited by that report, that some firms use sophisticated advertising techniques to promote products with little or no nutritional value—such as soft drinks—or have induced poor people to spend their meager incomes on products they cannot afford. What is your opinion Dr. French? If you agree, how can private industry avoid such mistakes? Does your analysis take these variables into account?

Answer. No response received.

Question. What two or three recommendations can you give the committee that would better the relationship of corporations with the Third World?

Answer. No response received.

[The prepared statement of Mr. French appears at the conclusion of the hearing, see p. 142.]

Mr. TONY P. HALL. I'd just like to ask one question of Dr. Hall. Senegal—and correct me if I am wrong—is one of those nations that really has severe droughts and, as a result, severe hunger problems. You have been specializing on a particular crop there?

Mr. ANTHONY E. HALL. Yes.

Mr. TONY P. HALL. And has that particular crop been very successful?

Mr. ANTHONY E. HALL. It is a crop for the poor farmers. It is cowpeas. It has been neglected for many, many years. It is a dry bean that people eat. And as you go to the Sahel zone north of Senegal, just below the Sahara where the bad droughts have been in recent years and the mass starvation, you get to the limit of where cultivation is possible. And then, there are only two crops that can be grown to produce food, pearl millet and cowpeas. And in the driest years, like last year which was the driest ever on record, cowpeas was the only crop to produce any food in that area; peanuts failed, pearl millet failed. So, in 1976, I began cooperating with the Senegal Government, in an attempt to put more priority on that crop. And we're working on it in the context of a cropping system, together with millet, to try and develop farming systems that are more stable and that will give some food in the very dry years.

Mr. TONY P. HALL. Has it been introduced widely in the area?

Mr. ANTHONY E. HALL. In the very dry zone, if a family wants to cultivate they've got two possibilities: pearl millet, cowpeas, and then a little peanut as a cash crop.

Mr. FRENCH. Excuse me, but is it not also true that this crop is indicative of some excitement that you've got in several companion crops, such as the whole chickpea, cowpea, pulp family? This is an area of considerable promise overall, is it not?

Mr. ANTHONY E. HALL. The grain legumes tend to be the crops that are particularly important for poor subsistence farmers. They are cheap protein, basically. They have been neglected by research, especially with respect to their adaptation and performance in tropical countries.

Mr. FRENCH. If I might have one comment I want to make on that, we find those kinds of crops—and those are the most classic—have not had the attention. When we went to look for staff to help us make a decision whether to have the goat project, if you can call it that, we found one-half of one man equivalent working on goat research in the United States, in the whole country. And I think what you are saying is that the same thing is true here in this area: These crops have, typically, not had attention because they are the crops of the poor countries and the very poor people, and they are isolated in certain areas.

Now, the goat is an exception. The goat is the most pervasive animal in the world, but it had never had the specific commercial orientation that the basic research establishment and educational establishment is normally attracted to study.

So, I don't want to belabor it——

I know you know this area more than I.

But I want to enforce very much the answer to your question, because it is a very vital question and the issue is a terribly promising one.

Mr. TONY P. HALL. Thank you.

Are there other questions of the panel?

Mr. EMERSON. I don't have a question, Mr. Chairman.

Mr. TONY P. HALL. Mr. Leland.

The CHAIRMAN. Dr. Hall, what is the relevance of U.S. agricultural research and development to the Third World?

Mr. ANTHONY E. HALL. Sorry. Could you, please——

The CHAIRMAN. The question is: What is the relevance of U.S. agricultural research to development, or vice versa?

Mr. ANTHONY E. HALL. If I may start slightly from another angle, earlier it was mentioned about optimism and that the research technology was available to solve the problems of hunger with respect to sub-Saharan Africa. My own opinion is that we basically do not have much of the technology that is needed because adaptive, specially tuned systems are needed for those conditions. This, then, reflects upon the types of research being done in the United States and whether or not it is relevant. Some of it is, some of it isn't. It is a very complex subject. But certainly, if you want to develop agricultural technology for Senegal, the main thrust of the work has to be done in Senegal, and you can only do a certain amount of backup work here.

The CHAIRMAN. Thank you, Mr. Chairman.

Mr. EMERSON. Mr. Chairman, I wonder if we could have the record open in such a way that we may submit questions in writing as a followup. It occurs to me that on the preceding panel we may have some questions maybe we would want to ask and the same with this panel. In the interest of time, it would be useful to have the record open and to submit questions in writing to be answered in writing. I request unanimous consent to ensure that the record is kept open for that purpose.

Mr. TONY P. HALL. I think it is a good suggestion, and without objection we'll keep the record open.

I want to thank you very much for your testimony.

This will conclude the first session today. We will take a short recess for lunch, and come back at 1 o'clock.

[Whereupon, at 12:20 p.m., the committee recessed, to reconvene at 1 o'clock p.m.]

AFTERNOON SESSION

Mr. TONY P. HALL [presiding]. Our second panel will address the issues of nutrition, health, and population in less developed countries. Three panel members from the University of California at Davis will begin this discussion. They are: Dr. Charles Halsted, professor of medicine at the School of Medicine; Katherine Dewey, assistant professor of community and international nutrition; and Dr. Jarvis, professor of development economics. We also have Mr. Richard Redder, vice president of Meals for Millions/Freedom from Hunger Foundation. Mr. Redder will discuss the problems of the foundation, which assists in alleviating hunger.

This is our second panel. We are most pleased to have you. We would ask you to keep your oral testimony to 5 minutes.

Dr. Halsted, would you please begin.

STATEMENT OF CHARLES H. HALSTED, M.D., PROFESSOR OF INTERNAL MEDICINE, SCHOOL OF MEDICINE, UNIVERSITY OF CALIFORNIA AT DAVIS

Mr. HALSTED. My name is Charles Halsted. I am a professor of internal medicine in the School of Medicine here, and a specialist in the field clinical nutrition. I am here to testify on the relationship between world hunger and mortality.

At the outset let me say that people do not die directly from starvation but usually from infectious illness which invades the starving body. Malnutrition and infectious diseases exist in a vicious cycle. The common link between malnutrition and life-threatening infection is alteration of the immune system, that is to say the body's defense against infection.

From research over the past 10 years, primarily in children with severe protein-calorie malnutrition, we know now that the immune system is profoundly affected by deficiencies of protein and other essential nutrients such as zinc. The sick-immune system thus permits invasion of a variety of pathogenic organisms which otherwise would simply coexist in the environment. Conversely, once infectious disease is established, the process of malnutrition is accelerated. Acute illness is usually associated with poor appetite, frequent vomiting, and resultant decreased intake of food. Furthermore, intestinal infections, which make up a majority of infectious illnesses, alter the absorption of essential nutrients and, at the same time, increase the requirements for essential calories and protein

A typical life-threatening attack of diarrhea in a malnourished child, for instance, causes severe dehydration, falling blood pressure, decreased kidney function, accumulation of acids in the blood, and stoppage of the heart. A typical, perhaps nonfatal, attack of measles in a growing child, on the other hand, will, nevertheless, cause a 10-percent decrease in body weight. Even without causing death recurrent infections slow physical growth, including the growth of the brain, resulting in decreased mental development. Ultimately, this means that the social and economic growth of the entire malnourished population will be limited.

The infant mortality rate is the most accepted measure of world health, ranging from a low of 7 in Sweden, to 12 in the United States, to greater than 200 deaths per 1,000 population in the first year of life in central Africa. The leading causes of death in the first year of life are: Diarrheal diseases and a variety of immunizable diseases, such as measles, pertussis, tetnus, polio, and diphtheria. The total worldwide infant mortality rate of 12 million per year is divided between diarrheas and the latter category of diseases. In many parts of the developing world, at least half of all days in the year during the first 5 years of life are spent with diarrhea, which has a worldwide annual mortality of 50 million per year and 5 million deaths occurring worldwide in children less than age 1.

Breakout from the cycle of hunger, starvation, malnutrition, and death from infectious illness requires a broad approach of basic education, provision of essential nutrients at critical times in the lifespan, and basic-health-maintenance programs including sanitation. Although immunization is important, history shows us that improved living standards make the major difference; 100 years ago in New York City, for instance, the infant mortality rate was similar to that in much of the present developing world, yet fell markedly with improved standards prior to the development of vaccines.

Studies from many parts of the world have shown that targeting a pregnant woman, especially in the third trimester, will prevent low birth weight, which, in turn, has a major effect on susceptibility to infection in the first year of life. Children born with a birth weight less than 2,500 grams, for instance, have three times greater infant mortality rate than those with a birth rate greater than 3,500 grams. It's also known that family planning with spacing births more than 2 to 3 years apart, and provision of as little as 500 extra calories per day during the third trimester of pregnancy, will contribute to normal birth weight and reduction of infant mortality by more than 50 percent. Beyond this, other studies have shown that literacy and emphasis on breast feeding for at least 6 months will further limit infant mortality. Human breast milk is an ideal source of nutrition, providing essential antibodies against infection as well as a sterile source of essential nutrients. And, furthermore, during breast feeding repeated conception is prevented.

Literacy is essential in educating the pregnant woman and young mother on the relationship between adequate nutrition, illness, and child development. More specifically, use of oral rehydration therapy for diarrhea, using easily mixed solutions of glucose and salt, have made a major impact in reducing deaths from diarrhea.

In summary, the greatest effect on world hunger is on infants and small children who become susceptible to life-threatening infectious illness. Malnutrition profoundly affects the immune system and increasing the likelihood of death from common infectious diseases. Studies from many parts of the world indicate that infant mortality can be significantly lowered by provision of proper nutrition in the last trimester of pregnancy, emphasis on breast feeding and family planning, and provision of adequate fluid replacement therapy in diarrhea. Overall improved living standards, education, and provision of nutrition at key points in the life cycle appear to be major factors in improving the health of the world population.

Mr. TONY P. HALL. Thank you, Dr. Halsted.

RESPONSES TO QUESTIONS FOR CHARLES H. HALSTED, M.D.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. Can the development of a network of village level workers to teach health, sanitation and nutrition practices be a cost-effective means to address hunger concerns?

Answer. Yes, I believe this is probably the most cost effective means, particularly since it places the primary responsibility on the local community. I am in agreement with the position taken by UNICEF; namely, that the young childbearing woman should be the target of education primarily in matters of birth control and basic nutritional principles during pregnancy and lactation. Sanitation is also primarily a matter of education, and the local community leaders are most likely to be credible to the population at risk.

Question. What are the major impediments to the developments of such a network?

Answer. There must be a commitment of each government involved to promote such educational programs, and this requires a favorable political climate. An additional major impediment is local custom and prejudice. For instance, macho attitudes prevail in most societies where the husband sees it as a mark of pride to have a large family, and in fact feels it desirable that his wife should be pregnant much of the time. A prevailing and perhaps realistic attitude is that large families are desirable to: a. Offset high rate of infant mortality, and b. to ensure support of the parents when the father is no longer able to work.

Question. What can this committee do to address the sanitation problems that lead to infection and malnutrition as you describe?

Answer. In my opinion the Peace Corps approach has been very effective in promoting the simple principles of sanitation and public health. I believe this kind of approach, as well as programs directly aimed at receptive governments to provide assistance should be an effective means of tackling this problem.

QUESTION SUBMITTTED BY HON. VIC FAZIO

Question. Could you comment on health conditions in areas of extreme food needs, such as Sub-Sahara Africa. What are the new health problems resulting from the famine conditions?

Followup. What should be the U.S. Government's response to these problems?

Answer. I believe that the health problems resulting from the famine conditions in Sub-Sahara Africa are similar to those that have arisen in any historical famine situations, with the added complication of severe water shortage. Thus, a variety of infectious illnesses complicate severe malnutriton, including a variety of diarrheal conditions, and other diseases such as typhus, influenza, etc. I believe that the approach of the U.S. Government should be to continue to support famine relief programs, preferably administered through regional and international programs such as World Bank, and provided in concert with educational programs to target population control.

I have submitted a recent article in the New England Journal of Medicine which provides useful statistics on the worldwide incidence of malnutrition and also focuses on the devastating secondary effects on developing populations of nuclear war involving the United States and North American, the major supplier of grain. My personal opinion is that the U.S. Government could serve the cause of world peace, population control, and eradication of hunger by diverting its resources from the production of useless weapons, such as the MX missile, toward effective support of international programs to foster population control and to eradicate hunger.

In addition, a recent editorial from the journal Lancet by Dr. George Silver, Yale University, which addresses the issue of Government priorities. Here it is pointed out that our Government has no policy on international health. The point is further made that military and economic aid is directed primarily on geo-political grounds, rewarding our friends and punishing our enemies, so that Egypt, Israel, and El Salvador receive three-quarters of all foreign aid. Foreign aid is less than 10 percent of U.S. weapons sales. I personally doubt that the U.S. Government whose present foreign policy is tied first and foremost to an anti-Communist crusade is philosophically capable of addressing the third of the worlds' population which suffers from severe malnutrition. The only possible remedy is a wide-reaching and fundamental change in direction of U.S. foreign policy which will make maximal use of regionl and international programs to address this issue.

QUESTIONS SUBMITTED BY HON. BILL EMERSON

Question. A primary focus of the Public Law 480 title II program is to provide special nutrition programs to relieve malnutrition among infants, children, pregnant and lactating women, and needy families. How effective, in your opinion, is this program in meeting the nutrition needs as you have described them?

Answer. I do not have ready access to data, nor am I certain that there are good data at present to answer this question. However, the UNICEF report on the state of the world's children contains reports of many statistical changes brought about by the GOBI approach when practiced on local levels.

Question. What role can the university community play in determining the correct mix of nutrition policy and programs which a given country should pursue in order to maximize our international development assistance efforts in nutrition?

Answer. I think the role of the university should be similar to its role in other areas of government policy, namely to provide expert consultation and advice based on selected experience. Beyond specific university programs which may serve as small scale models for what government should or should not do, universities also support research programs dealing in specific areas. For instance, Johns Hopkins University was very successful in Calcutta and later in Bangladesh in developing programs for treatment of cholera and for many other diarrheal diseases. For many years, Vanderbilt University supported a nutrition program as part of the U.S. Navy Research Unit in Cairo, Egypt, which, among other things, made significant advances in scientific understanding of the importance of zinc in human nutrition, proper treatment of kwashiorkor, to name a few. These examples illustrate how focused programs can ultimately be of great benefit in reducing disease and mortality.

[The prepared statement of Mr. Halsted appears at the conclusion of the hearing, see p. 155.]

Mr. TONY P. HALL. Dr. Dewey.

STATEMENT OF KATHRYN G. DEWEY, ASSISTANT PROFESSOR, DEPARTMENT OF NUTRITION, UNIVERSITY OF CALIFORNIA AT DAVIS

Ms. DEWEY. Thank you. It's a great honor to be able to address the committee.

Dr. Halsted has nicely explained that malnutrition is not simply a matter of lack of food, that there are a lot of other complicating things such as illness and other factors that cause people to become malnourished. In the morning session we heard a great deal about how to increase agricultural production. And what I would like to do at this time is to examine what the relationship between agricultural development, between projects to increase food production, and the alleviation of malnutrition might be.

One of the common assumptions of agricultural development projects is that increased food production, and, in some cases, increased income from that food production, will solve the problem of hunger and malnutrition. But there are several problems with that assumption that I think must be addressed.

One assumption, or one part of that assumption, is that people are hungry because there is not enough food to go around. And in most of the world, most of the less-developed countries, today, food production is generally adequate to meet the needs, on a per capita basis, of the population. The problem is that many people do not have access to the food that is produced, so that it is the inequitable distribution of food rather than total food production, per se, that is primarily responsible for malnutrition. This is not to say that in the future food production will not be limiting in the face of rapid population growth, but the malnutrition that exists in today's world is due more to the inadequate distribution of that food than it is to a total lack or shortfall in food production.

One example of this fact is in southern Mexico where a very large-scale agricultural development project was initiated in the 1950's to increase agricultural production. And they were extremely successful. Over a 13-year period, the economic production of the area increased sixfold, and for some crops such as sugarcane the production was a tenfold increase. But there was a study done, both before and after this increase, of nutritional levels in the population, and it was found, quite clearly, that the poorest third of the population did not feel any benefit from this increased production. Most of the food that was produced went to central Mexico, because of the increased demand for beef and sugar in central Mexico. The local people had no real change in their diet as a result of the increased food production.

One of the ways in which economists assume that production programs will improve nutrition is via increased family income. But the question of whether development projects will actually increase income of the families who need it depends on which families actually benefit from those projects. For example, if an agricultural development project requires that each family has some land, the landless families in the area would not benefit unless there are increased employment possibilities as a result of the increased food production on the land others hold, or if wages rise at the same time. Even for poor families that have land, if increased food production on that plot of land results in a decline in prices for the product they are producing, we cannot necessarily assume that their incomes will rise.

Another problem with the assumption that food production will necessarily solve hunger is that even in the face of increased income some families will not necessarily have an improvement in their nutrition. And this is partly because if the production of cash crops comes at the expense of the production of food for home consumption, then there may be a decline in quality of the food that is available to that family. This is especially true when a conversion from home food production to cash crop production causes a change in prices of staple foods in the local area. If those prices increase, the families who now must purchase their food may be worse off than before. In my own research in southern Mexico, I found that families who were able to maintain their own home food production were those with the best nutritional status.

For all of these reasons, then, development projects must pay explicit attention to the nutritional impact of what is being proposed. In some cases this has meant that planners attempt to tack on conventional nutrition programs to their overall development scheme, but this is not sufficient. Nutrition must be an integral objective of development projects and not merely a subcomponent of nutrition education or whatever.

To do this one needs to target projects so that the benefits are not appropriated by those who least need them in an area. This is sometimes not done by development agencies, partly because the nutritional criteria for judging the success of a project may conflict directly with economic criteria for judging those projects. For example, in a recent integrated development project in the Philippines, it was argued that targeting the project to the most malnourished farmers who may be somewhat less productive, due to anemia, for example, would jeopardize project-efficiency criteria. So, for this reason we need to reexamine the way projects are designed and the beneficiaries to whom they are targeted.

When governments or development agencies do consider efforts to improve nutrition, they usually think in terms of conventional nutrition interventions, such as supplementary feeding programs, nutrition education, or fortification of foods. In some instances those kinds of programs are appropriate; for example, fortification of foods with vitamin A, where there is a widespread problem with vitamin A deficiency. But in many other cases, programs such as supplementary feeding or nutrition education not only fail to address the root causes of malnutrition, that is, poverty, but they also generally have fairly disappointing success rates.

The benefits of supplementary feeding programs are generally due primarily to their income transfer effect, but that is something that could be achieved more efficiently with other sorts of programs. Nutrition-education programs, which are sometimes initiated in order to convince local populations to consume foods with which they are unfamiliar, are of limited usefulness when poverty is the root cause of malnutrition. How do you go into an area of poor families and tell them that they should consume more fruits, and vegetables, and milk products, when all they can afford is rice and beans? We would do a lot better to target our nutrition education to health-care professionals who sometimes, inadvertently, actually have a negative effect on nutrition, for example, by discouraging breast feeding.

Now, because conventional nutrition programs by themselves don't generally address the root causes of malnutrition, we need to broaden the concept of what a nutrition program is to include strategies that are based more on economic policy or on including health care as an aspect. There are integrated programs, for example, which include health-care provision with foods or nutrition education; and these are very appropriate programs, because as Dr.

Halsted has explained, there is a synergistic effect between infection and malnutrition. We cannot expect children to benefit very much from giving them food to eat if they are constantly plagued with diarrhea; then they will not be able to gain the benefits of that food, and, vice versa, they will not benefit as much from health care if they are malnourished.

The most effective integrated programs are those that target the most vulnerable groups such as pregnant and lactating women and very young children. And the comprehensive program that UNICEF has been promoting, the four-point GOBI strategy which includes the use of growth charts and oral rehydration therapy to prevent diarrhea from causing death, the use of or the promotion of breast feeding, and universal immunization of children should be promoted to the fullest extent possible. There have been some very dramatic decreases in infant and child mortality as a result of those efforts.

Some may fear that some of those efforts to decrease infant mortality may actually contribute to higher rates of population growth, but in reality it has been well documented that improved child survival actually decreases birth rates by reducing the need for large families and by preventing the very short birth intervals that result when an infant dies as a result of termination of breast feeding. Family planning is much better accepted when child survivorship is ensured for families, and, in my opinion, should be promoted only under those circumstances.

The other strategy for improving nutrition and for broadening our concept of what nutrition programs are, are the economic based policies. For example, agricultural development projects can be considered as nutrition interventions if they are properly targeted. In many cases, however, economic development of Third World countries has a built-in urban bias, and we need, as some of those in the morning session emphasized, to target more on agricultural development efforts.

A more directly effective type of economic-based nutrition intervention is food-price subsidies. When those are properly planned, subsidies for staple foods in a population are self-targeted to the poorest groups, because food is a higher proportion of expenditures among the poor than among the wealthy. However, as was mentioned, food price subsidies can have a deliterious effect on agricultural production if, as a result, agricultural prices are depressed. As a result, governments sometimes face the costly burden of subsidizing not only the cost to the consumer but also the price paid to the farmer, and that is a very expensive route to take.

One serious political impediment to the concept of considering economic-based projects as nutrition interventions is the common segregation of responsibilities within governments into separate ministries for either health and nutrition, on one hand, or for economic planning and agricultural development, on the other hand. Nutrition is generally not integrated with economic planning or agricultural development, and it should be.

Untimately, of course, the only long-term means by which to eliminate malnutrition is through broad-based national strategies of economic development rather than through piecemeal individual development projects. But it is important to reiterate that economic growth alone will not reduce malnutrition. In fact, some of the most frequently cited governments that have achieved rapid improvements in health and nutrition, for example, China, Sri Lanka, Korea, and Taiwan did so at a time when their per capita GNP was extremely low. They were able to make these gains by emphasizing a more egalitarian distribution of land and wealth and by providing broad access to primary health care and education.

The most important way in which the U.S. Government can help to reduce malnutrition in the Third World is to develop a foreign policy that will support countries making these broad-scale changes. Thank you.

Mr. TONY P. HALL. Thank you.

RESPONSES TO QUESTIONS FOR KATHRYN G. DEWEY

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. What is the impact of maternal and child feeding programs on both the nutritional status of the participants and, potentially, on breastfeedifg practices? Do maternal feeding practices change?

Follow-up: How can the U.S. foreign aid programs better address these concerns?

Answer. When maternal and child feeding programs are combined with primary health care, they can have a significant effect on nutritional status of participants. This effect is most pronounced when supplementary food is provided during pregnancy: Increases in infant birth weight and decreases in infant mortality have been documented following prenatal nutritional supplementation in malnourished populations. An infant of higher birth weight is likely to breast feed more vigorously, thus stimulating a higher level of milk production during lactation and better infant growth during the early months of life. Maternal supplementation during lactation appears to have a significant effect on maternal health but less of an effect on milk production, because among malnourished women, milk volume appears to be maintained at reasonable levels even at the expense of the mother's nutritional status. Child supplementation programs have recently been reviewed by Beaton and Ghassemi, American Journal of Clinical Nutrition, 35 (4):864-916, 1982. Without provision of primary health care and improved sanitation, child feeding programs are of dubious benefit, as child malnutrition is usually the combined result of infection and undernutrition. In integrated programs, the beneficial effect of nutritional supplementation can be demonstrated, especially if the program is targeted to the youngest preschoolers—12 to 36 months.

Infant feeding practices may improve in response to feeding programs if nutrition education is provided to promote breast feeeding and the appropriate timing of supplementary foods. However, if feeding programs provide take-home foods such as dried milk power without education in their use, they may have a negative effect on infant feeding if those foods displace breast feeding.

U.S. foreign aid programs can be improved by including primary health care and improved sanitation as integral components of supplementary feeding programs, and by targeting such programs to the most malnourished populations and especially to pregnant women in those populations. Although supplementary feeding programs generally do not address the root causes of malnutrition, they can have a significant effect on health status, which may help underprivileged populations to work toward larger-scale changes. Care must be taken, however, to ensure that the provision of foods for feeding programs does not have a deleterious effect on local food production and hence on rural incomes.

Question. What other U.S. policies, such as those related to agricultural subsidies, and export-import restrictions, have on food availability and food demands in these countries?

Answer. This question should be addressed to Dr. McCalla and Dr. Jarvis.

QUESTION SUBMITTED BY HON. VIC FAZIO

Question. What is the impact of food aid on the agricultural system of a country?

Answer. Without careful use of food aid within the recipient country, imported foods can have a disincentive effect on domestic food production by driving agricultural prices down. However, some countries have successfully used the revenues from food aid to support domestic agricultural production of specific crops. Dr.

McCalls can provide more specifics on this point, and I also refer you to the book by M. Wallerstein which I cited in my written testimony.

QUESTIONS SUBMITTED BY HON. BILL EMERSON

Question. How can we, as a government and major donor of international development assistance, work in countries on nutritional policy on nutritional policy issues when, in some cases, the recipient government does not place a high priority on such issues domestically?

Answer. This is an excellent question. Given that the United States already intervenes to influence policy in recipient countries, I believe that pressure can be brought to bear on those governments to place a higher priority on nutrition policy. Conditional aid would be one mechanism for doing this.

Question. We have heard much about the GOBL concept from UNICEF director James Grant. To what degree has this important concept been accepted in Third World countries and how successful have bilateral and multilateral organizations been in implemeting these programs in cooperation with recipient governments?

Answer. The GOBI strategy is attractive to many countries because of its low cost and effectiveness. Furthermore, it is a strategy that can be implemented by countries with diverse political and economic structures and as such, is less likely to provoke controversy than broad-scale development efforts involving land reform, for example. Ultimately, it is my opinion that those broad-scale efforts will be necessary to reduce malnutrition due to poverty, but the GOBI strategy is an important beginning in those countries where broad-scale changes will not be soon forthcoming. Examples of the implementation of the GOBI efforts can be found in the report prepared by Dr. Grant, The State of the World's Children, 1984.

[The prepared statement of Ms. Dewey appears at the conclusion of the hearing, see p. 166.]

Mr. TONY P. HALL. Professor Jarvis.

STATEMENT OF LOVELL S. JARVIS, ACTING ASSOCIATE PROFESSOR OF AGRICULTURE ECONOMICS, UNIVERSITY OF CALIFORNIA AT DAVIS

Mr. JARVIS. Thank you very much. My name is Lovell Jarvis. I am a professor in the Department of Agricultural Economics in the University of California at Davis. I have worked in developing countries for about two decades, and have been a consultant to the World Bank for the last 11 years, primarily on the expost evaluation of projects in agriculture and rural development.

Many of the points that I consider important have already been made by my colleagues who have spoken today. I'd like to emphasize a number of points and provide several examples.

One of the first points I want to make is that many developing countries in the world, in the last three decades, have made really quite noticeable progress. They've grown at high rates of economic growth, they have made substantial improvements in the overall living standards, nutritional standards have improved, educational standards have improved, life expectancy has gone up, infant mortality has gone down. These countries have achieved sustained economic growth. They've achieved sustained economic growth which has been more rapid in this recent period than that rate of growth which was achieved by the now developed countries like the United States, Western Europe, and Japan during similar periods of development in their own past history.

I say this not to inspire complacency—quite the contrary—but to indicate that the application of improved policy, strengthened political institutions, modernizing ideologies, and applying science to industry and agriculture has resulted in very substantial progress in many developing countries. And I think that that should give us some hope. It should indicate to many who, I think, suggest sometimes that foreign aid has made very little contribution, that, in fact, we have been making substantial progress. There is room for hope and for redoubled effort.

Now, despite substantial progress there are, obviously, a large number of countries who have not yet achieved sustained high levels of economic growth nor progress in other levels. If one examines many of the poorest countries in the world, they are, indeed, lagging substantially behind. Excluding China, per capita incomes in the lowest income, less developed countries have increased less than 1 percent per year annually during the last 20 years. These countries have approximately one-third of the world's population, so that clearly the nutrition problem remains large.

Economic growth is essential in all of these countries to achieving a long-run nutrition solution. But economic growth, with trickle down, is not enough to solve the short-run nutrition problem. These countries need both policies designed to achieve economic growth and programs to provide their most seriously malnourished with specific aid during the short to intermediate run. This is a major challenge. They are being asked to undertake two difficult tasks simultaneously, in the face of scarce human and material resources. These countries have not initiated the process of sustained economic growth in large part because their political, social, and economic institutions remain weak, they have few national resources, and their populations are relatively poorly trained and educated. Their governments have few tax revenues. In this situation, external assistance can be extremely helpful to them, provided—and just to come back to a point that Kay just recently made—that there is domestic will to use it wisely. Foreign aid, therefore, can contribute moral support, encouragement, policy analysis, and also material assistance.

We've learned substantially about malnutrition, its causes and cures, in the last couple of decades. And I believe that several guidelines, several broad guidelines, have emerged which are useful in the design of programs.

One of the first points, one which was mentioned by Alex McCalla this morning, is the importance of agriculture. The bulk of the world's poor are agricultural producers and agricultural laborers. They will achieve improved nutrition only if they can obtain more productive employment. In the low-income countries, those countries which are growing most slowly now, approximately 70 percent of their population is in agriculture. There is simply no physical means by which the bulk of this population can be employed in industry or in services in the next few decades. Increased production and higher incomes, which are the means of gaining access to food, must come from higher agricultural production. That means that greater emphasis must be placed on agricultural development. It means an emphasis on agricultural incentives, on agricultural prices, on research and extension, and on agricultural infrastructure investment as a means of achieving economic growth in the entire society, not just in agriculture.

A second point is the importance of getting agricultural prices right. Prices affect both consumption and production. There's ample evidence in less developed countries that both producers and consumers respond rationally to prices. And this creates a very important dilemma. We're focusing here today on malnutrition. It is clear that if we raise agricultural prices to give producers incentives to produce more, that the poor, who already spend 85 percent of their income on food, will be able to consume less food unless something else is done. Similarly, most governments are extremely preoccupied with the political support of the urban sector and particularly the urban middle class, and that group is generally very sensitive to food price increases which decrease their real income. Thus, governments are facing pressures from international agencies and from their own food demand to provide their producers with greater incentives, and, at the same time, placate upper class urban groups while trying to stave off the impact of higher prices upon malnutrition of the poor in both rural and urban areas.

It's not a solution which has any simple or easy answer, but it's a very crucial dilemma. And I think the points that Alex McCalla made about Egypt would support that this morning.

I think it is very clear, however, that prices to the producer, both for the outputs that he sells and for the inputs that he uses, particularly, for example, fertilizer inputs, those prices have got to be kept at a level which provide him with adequate incentives if they're to have a long-run solution to malnutrition around the world. If prices, food prices, are kept artificially low, new technologies, even if developed, will not be adopted, investments will not be made, and output and incomes will not increase at a rate adequate to eliminate malnutrition for the bulk of the population.

Now, if one is maintaining agricultural prices at an adequate level, then it is clear that a large number of poor consumers will suffer from malnutrition in the short and intermediate run, unless one designs complimentary programs to assist them. Some form of targeted food aid and the broader programs that Charles and Kay have both spoken about this morning—or this afternoon—involving health care, education, as well as nutrition, are necessary. Generalized food subsidies, in general, are not the answer because they are simply too expensive. And I'll say more on that just briefly.

The next point I'd like to make is the income distribution and political element.

Mr. Tony P. Hall. Mr. Jarvis——

Mr. Jarvis. Too long?

Mr. Tony P. Hall [continuing]. We need to move on; and if you can, summarize in the next 60 seconds, please.

Mr. Jarvis. Fine. I'll do that.

The other positions I was going to state were that income distribution and the political element are crucial. There is a need for the targeted food aid. There are also limits on it. Those are, basically: Cost, the problem of leakage—the fact that much of the aid does not go to the individuals who are targeted; and the administrative requirements are very important. Most developing countries have very limited management skills, and as you implement the larger and more complex programs, they encounter great problems in trying to implement them. Finally, the need for a feedback loop is of great importance, that is devising some mechanism for continuously evaluating the programs which are being implemented and making continuing improvements.

In the testimony there are three cases illustrating a number of the points which I have raised. Thank you.

Mr. TONY P. HALL. Thank you.

RESPONSES TO QUESTIONS FOR LOVELL S. JARVIS

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. How can the U.S. Government better support health and nutrition activities in and with less developed countries?

Answer. No response received.

Question. In your experience, what improvements can be made in coordinating U.S. Government and national government efforts in these programs?

Answer. No response received.

[The prepared statement of Mr. Jarvis appears at the conclusion of the hearing, see p. 171.]

Mr. TONY P. HALL. Mr. Redder.

STATEMENT OF RICHARD A. REDDER, VICE PRESIDENT, MEALS FOR MILLIONS/FREEDOM FROM HUNGER FOUNDATION, ON BEHALF OF PETER J. DAVIES, PRESIDENT

Mr. REDDER. I'm very pleased to be here this afternoon to represent Meals for Millions/Freedom from Hunger Foundation, which is one of the private voluntary agencies trying to implement programs using some of the theories and ideas that we've been listening to today. And we think we have a model which may be the answer—partly the answer—to the problem.

First, let me sketch the world hunger problem as we see it. Chronic hunger and malnutrition, along with world peace and nuclear disarmament, are among the most compelling problems of our time. World food production has increased dramatically over the past decades, yet hunger and malnutrition have not declined. In many African countries food production is still declining, and, in fact, malnutrition is increasing rapidly.

Most observers agree that the world is currently producing enough food to feed everyone, and yet, today 400 to 500 million people remain severely under nourished, with perhaps a quarter of the world's population receiving an adequate diet. Most of the undernourished are young children. The starving-child-skin-and-bone image, an image which is too often used to represent the developing countries, needs to be replaced by a greater international understanding of what child malnutrition really means.

As James Grant, director of UNICEF notes, while more than 40,000 children died from malnutrition and infection every day last year, for every child who died, 6 now live on in hunger and ill health which will be forever etched upon their lives.

Furthermore, the World Bank estimates that about 1 billion people live in absolute poverty. Malnutrition is essentially a product of that poverty. The causes of that poverty are overpopulation, unemployment, poor sanitation, lack of potable and irrigation water, inadequate health services, low agricultural production, and poor dietary habits, among others.

As many have come to realize, and I believe it is important for the committee to focus on this, food aid, while necessary, does not get at the root causes of poverty and malnutrition and can be a disincentive to production and to overcoming poverty. These root

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causes are manifold and complex. Women, previously ignored, are now recognized as crucial to food production, nutritional improvement, primary health care, and family planning. Hence, education and training of women can have a major multiplier effect on a community's and a country's welfare and development. Environmental factors also inhibit overcoming poverty and need to be addressed. Likewise, overpopulation is a major factor that contributes to poverty and malnutrition, so that family planning information and services need to be included in developing programs.

How, then, do we, a moderately sized, innovative development agency, do something effective to overcome these debilitating and inhibiting problems just touched on above?

We believe that only through a long-term development process in which people change their own lives through their own efforts, will poverty and world hunger be overcome. People must be empowered to control their own development if they are to break out of the vicious cycle of poverty. This is what we mean by Meals for Millions' motto: Self-Help for a Hungry World.

We believe, also, that our people-to-people approach, because it facilitates a substantial degree of community participation, is the best way to create opportunities for malnourished, low-income people in developing communities in the United States and abroad, to recognize and develop their potential. This people-to-people approach is also less capital intensive and more adapted to suit local resources and conditions. Furthermore, this qualitative factor is as important as the improved farming methods, better nutritional practices, and good sanitation. To put this philosophy into practice, our board has adopted as Meals for Millions' goal:

First, to strengthen the capabilities of people in developing communities to solve their own food and nutrition problems;

Second, to do so within the framework of the community's economy and culture;

Third, to give special emphasis to nutritional needs of infants, children, pregnant and lactating women; and

Fourth, to advance and perfect the participatory or self-help approach to lasting development.

To realize this fourfold goal, Meals for Millions has developed an integrated approach which we call applied nutrition programs. Meals for Millions conducts these applied nutrition programs in association with indigenous organizations—private, church, State, local, and national.

We do not seek to duplicate all disciplines, but to collaborate with other international and, in particular, local groups.

We seek recognition and approval of the Government involved at all levels, but do not depend on them.

To the extent possible, we employ local national personnel rather than placing Americans overseas.

Our approach is to stimulate change rather than simply to transfer technology or knowledge.

Above all else our task is to act as a motivator, catalyzer, organizer, so as to mobilize local resources, both human and material, to carry forward programs and to continue them after Meals for Millions' support and technical assistance ceases.

Integrating and linking community services and resources is cost effective. It allows Meals for Millions to extend its program activities beyond the scope of its own resources and to strengthen the service delivery capability of local organizations. This, in turn, leads to a self-sustaining process which will continue once Meals for Millions withdraws its support and technical assistance.

It is not Meals for Millions' purpose to attempt to overcome poverty and malnutrition in every community in each country in which we work, but to provide an example and methodology that perfects the self-help and participatory process so that it may be extended to others. Thus, our objective is to establish models that can be reproduced and multiplied manifold by Government.

What impact are we having? Our programs are having a measurable, significant result in a relatively short time, 5 to 10 years. For example, a recent AID evaluation of our Applied Nutrition Program in the Olancho Department of Honduras, after only 5 years of work, shows a remarkable 24 percent overall reduction in serious malnutrition among young children, and 70 percent reduction among a group of 100 children closely monitored over the 5 years.

In Honduras, as catalysts and enablers, Meals for Millions' staff have developed fruitful working relationships with the local health center as well as with government agencies and the villagers themselves. Result: The ministry of health is so impressed by our child health and nutrition monitoring that it has asked us to train Government nurses and is reviewing the program for possible regionwide replication.

Last year in Honduras, Meals for Millions established an inkind revolving loan fund which supplied farmers with fertilizer, seed insecticides, tools, fencing, and grain storage silos—this all in addition to the nutrition, education, and primary health care work provided. With this modest assistance farmers are improving the quality of their life. Honduras is but one example, and we are receiving a similar response and are having as great an impact in other communities and countries.

While I could go on with many more examples, the point I want to leave with you is that development can take place if the people to be benefited are an active part of the process. The problems of hunger, malnutrition and undernutrition, and poverty are solvable if one recognizes that it takes time, commitment, and patience to build the self-reliance and people involvement so essential to achieving lasting development.

I thank you and would be happy to respond to questions.

Mr. TONY P. HALL. Thank you very much.

RESPONSES TO QUESTIONS FOR RICHARD A. REDDER

QUESTION SUBMITTED BY HON. MICKEY LELAND

Question. In carrying out project design, what analyses are done to determine potential negative, as well as positive effects of a planned project?

Answer. No response received.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. What would you consider the one or two factors contributing to the success of Meals for Millions

Answer. No response received.

Question. How successful has Meals for Millions been in raising funds for its projects overseas? Do you find that Meals for Millions—like other private concerns—is overwhelmed by the funding process?

Answer. No response received.

Question. What types of problems has Meals for Millions encountered in it's work?

Answer. No response received.

Question. How can we in the Congress assist in facilitating yours and other organizations?

Answer. No response received.

QUESTION SUBMITTED BY HON. VIC FAZIO

Question. How can we in the Congress assist in facilitating yours and other organizations?

Answer. No response received.

[The prepared statement of Mr. Redder appears at the conclusion of the hearing, see p. 180.]

Mr. Tony P. Hall. I would like to ask a question of Dr. Halsted, and possibly Kay Dewey. You both talked about malnutrition and hunger from the standpoint that it is not just a lack of food, it has a lot to do with infection—malnutrition and infection pretty much go together. If you don't break the cycle, you're not going to break the problem of hunger.

I would like your views on the GOBI method. Would you say that this particular method is the most important short-term project we can stress, coming from this committee or coming from this country, or are there others?

Mr. Halsted. Well, first of all, there are very good statistics from countries like Bangladesh, where the oral rehydration therapy has been widely introduced, showing 80- to 90-percent reduction of mortality from diarrheas. The GOBI method, by itself, basically is stressing education of the pregnant and lactating woman. Improved sanitation is another aspect that also has to be brought in if we are going to break the cycle of infectuous illness. Improved sanitation is an essential basis of a better standard of living, which must go together with education on proper nutrition and family planning.

Ms. Dewey. I'd like to make a quick comment. I think one of the virtues of the GOBI approach is not so much the individual methods, themselves, although they are very effective, but in the concept that Dr. Grant has introduced of attempting to promote a children's revolution—is how he calls it—in which empowering poor people with these methods to increase the survivorship of children and give them the means by which to then go on and move more in the direction of social change and in other areas such as education and sanitation, to then go further than that. But I think that, as an initial step, even in countries that are not that committed to the kinds of strategies to really improve nutrition, the GOBI methods are a very good starting point; so I would encourage them very strongly.

Mr. Tony P. Hall. Questions of the panel, Mr. Leland.

The Chairman. Dr. Jarvis, I was at the Chicago Board of Trade not too long ago, and had the opportunity to speak with the chairman of the board. He had suggested that Third World developing nations don't readily use their available resources. Can you comment on that?

This may be out of synch with our hearing, but I'd like to take this opportunity to ask you for your reactions.

Mr. **Jarvis**. Well, there has been great progress in the last 10 years on developing food security systems. There are two aspects to that: Some of the international programs designed to increase food stocks and to provide concessionary aids from individual countries like the United States, also with financial assistance guaranteed through the International Monetary Fund.

There's another development, and that is the growth and sophistication of private grain markets throughout the world, which work much more efficiently than before. There are more private grain stocks available today, private grain traders, and there's a lot of evidence to suggest that that market is much more competitive, in fact much less monopolistic, than what we believed it was perhaps 5 years ago. And many countries, particularly through trading in the futures market—for their daily or annual need, not just famine prevention—can, in fact, save up to 10 percent of their overall grain bill. There's a good deal of academic literature now coming out in this area. And there are efforts in some countries, like Mexico to develop State grain-trading agencies within those countries to participate in that.

The **Chairman**. Do you suggest that this committee look at this?

Mr. **Jarvis**. I don't think that it's necessary. Developments are taking place so rapidly in the private sector. The only place where I think intervention might be useful would be to ensure that many countries who do not know of these opportunities receive some instruction in it, perhaps of staffs. Substantial staff training is required to be able to take advantage of it. And that might be an area in which you could——

The **Chairman**. I'd like to ask Ms. Dewey, if I can.

Or do you prefer Dr. Dewey?

Ms. **Dewey**. Dr. Dewey.

The **Chairman**. I don't want to appear sexist, and I think I have been already. I apologize. That is a major faux pas.

Dr. Dewey you gave the example of Sri Lanka and what progress that country had made, along with some other countries. Can you give us a short synopsis of the progress Sri Lanka has made?

Ms. **Dewey**. Sure. Sri Lanka is an example of a country which has followed what is called the basic needs approach in their development strategy; which means that in order for them to get the most productivity out of their population, they believed that they needed to work on those aspects that limit productivity of the individual members of the population. And so they, therefore, concentrated on providing broad access to education, primary health care, and food. And this was done in such a way that all sectors of the population had access to those improvements.

One of the components of that was the food subsidy program that Dr. Jarvis mentioned, which was extremely expensive. And for that reason, in 1979 they had to cut back on that aspect of their program. But by that time, the population had already seen significant improvements in reducing infant mortality and in improving health care and the statistics. And I mentioned to you that life expectancy in Sri Lanka is on the order of 70 years, which is very close to what it is in this country. And this is with the GNP vastly, vastly lower. So, they've made very great progress.

I think maybe Dr. Jarvis would like to also discuss this. But one of the great questions among development experts is whether one can take this approach, the basic needs approach, and still have the resources left for long-term economic growth; in other words, is there a tradeoff between the short-run improvements that may be very costly to achieve and long-term economic growth?

Do you want to talk about that?

Mr. JARVIS. That is, indeed, a controversy. I guess I would have to respond somewhat from the heart as well as the head.

It is obvious from some countries like Sri Lanka, which has not grown particularly rapidly but has grown in the midst of the implementation of these basic needs programs which have had very substantial impact on the population, that you can do it. China is another country which, with a very different political system, has grown very rapidly at the same time that it has provided a wide variety of basic public needs to its population. I think the difficulty is to get the political commitment from governments so that they really want to transfer resources to their poor, and then carry out intelligent policy analysis to find out What are the resources that you have available? What are your most crying needs?" and go after those first, trying to get, in some sense, the most for your money.

There are limits, but clearly most countries could do vastly more than what they currently are doing.

The CHAIRMAN. Thank you, Mr. Chairman.

Mr. TONY P. HALL. Mr. Emerson.

Mr. EMERSON. Thank you, Mr. Chairman.

Mr. Redder, what has been the experience of your organization in raising funds for your work? Are there particular groups or organizations in the private sector that take an interest in grassroots and self-sufficiency oriented programs such as yours?

Mr. REDDER. Yes, indeed, there are. Most of our funds come from private donors. Fifty percent come from individual donors around the United States. And, then, we get funds also from foundations and corporations, about 17 percent—churches 16 percent. And we also get funds from the Agency for International Development, which is about 25 percent. So basically, we can say that 75 percent of our funds come from private sources, and there is a lot of interest in development overseas and in the United States.

Mr. TONY P. HALL. Mr. Fazio.

Mr. FAZIO. I would like to perhaps ask Kay Dewey and then others to join in in response to this.

We've talked both here and outside during lunch about trying to condition foreign aid, to a certain extent, to induce policies in countries that we assist. Conditions that do, in fact, make some internal reforms and concentrate on the problems of people who we all identify as most in need of nutritional assistance. But we also know that sometimes political realities make either the condition of aid or the willingness of those countries to agree to those conditions difficult for us to accomplish.

Would you comment on: No. 1, the political efficacy of setting conditions. No. 2, what are the most important, as you see them? And perhaps we can go on from there.

Ms. **Dewey**. OK. I'm sure other people will want to respond as well.

I think that Dr. McCalla addressed this morning the problem of disincentive effects that food aid can cause by depressing agricultural prices for the foods that are imported. And I think there are ways around that. However, one other major problem with food aid is the fact that the population that benefits most from it is the urban sector, and in many cases the urban middle class even more than other sectors. And this is probably due to the fact that food is produced in rural areas of developing countries, and so providing food aid to the rural sectors is not necessarily the way to go; in fact, it may depress agricultural prices and hurt the poor farmers and even landless in rural areas even more than it helps them.

So, the question becomes: How does one target food aid better to the people who need it the most—if one, first of all, assumes that food aid is a good way of trying to reduce malnutrition? And maybe we can get back to that later.

But if you are interested in targeting it, there are a couple of programs under the title II food aid, which only applies to 40 percent of food aid, which are designed as food for work or other types of programs. Now, sometimes food for work programs are not a good idea. Because if, for example, people are paid in food for work on land to increase the productivity of that land, but that land is not held by the poor people, then, in fact, you may be increasing inequity in wealth in the rural areas more than you are decreasing it.

So, if you are, then, to have food for work programs in which the project which people are paid for in terms of food is to increase productivity of land that is commonly held, and, therefore, of benefit to all of those people, that is one way to target it better. Another way of targeting it is to provide food as some kind of a payment for people to increase their employability in training programs, for example, where people are then brought into areas and paid in food for learning some skills that will improve their employability.

Those are ways of targeting food that get more at the root causes of malnutrition than does just providing food ad lib to a population. The political impediments to doing that, however, are very great, because, as we discussed, the urban middle class is often the most vocal sector in a developing country and it is necessary to placate or appease that population in some way in order for the government to keep power. And, so, I think there are very real constraints on taking that tac.

Mr. **Fazio**. Dr. Jarvis wants to comment, but I just want to read a sentence from the concluding paragraph of your remarks. You said when talking about China, Sri Lanka, Korea:

> They were able to make these gains by emphasizing more egalitarian distribution of land and wealth and by providing broad access to primary health care and education.

What I am hoping to elicit is, do you think we ought to be interfering in the policies of these countries to the point where we promote land distribution, land reform, this sort of thing, before we provide assistance specifically?

Ms. DEWEY. I think our foreign policy, in general, should be directed at encouraging those schemes. I think you would run into great political obstacles in the United States, however, if you made those conditions on food aid. Because it hasn't yet been emphasized enough, I don't think, that the main objective of U.S. Public Law 480 food aid is to get rid of surplus production of U.S. farmers and not, necessarily, to feed the hungry in the Third World. And until we decide what our objectives really are in terms of food aid, I don't think we can necessarily say that those conditions are going to be feasible.

Mr. FAZIO. And the problems of the receiver countries go beyond simply the urban middle class, too, because I'm sure there are people who have a vested interest, say, in land holdings in rural parts of those countries that have a direct interest as well.

Ms. DEWEY. You know, I mean, ultimately the objective of food aid, in terms of alleviating malnutrition, would be to wean countries off of that food aid, so that they could produce their own food, and, therefore, not need it any more. But that is directly contrary to the objective of food aid in terms of preducing U.S. surplus production.

Mr. REDDER. I would just say that I support that 100 percent, and add to that that food aid, the bottom line of food aid, is a short-term solution to hunger in any case, and that unless food is targeted, or policies are targeted toward doing something to encourage the agricultural production in countries and increasing the level of income in those kinds of things, that all of the food aid that we are able to get will be of naught in a short period of time, that it really has to be targeted to something that's going to be replace that. Because if you give food for 2 years and then you stop, what is going to replace it? There has to be something there.

And even in cases of disaster, in natural disaster—I can cite a case in Guatemala when they had the earthquake; I believe it was in 1977, 1978, in there, maybe earlier. But Guatemala had just experienced the largest single corn crop that they'd ever had in their life, and also bean crop; they had a production that was outstanding. And there was plenty of food available to take care of the emergency, but in our goodheartedness here in the United States, we shipped down tons of corn, and tons of beans, and demolished the market for the farmers who were there, who we were supposed to be helping, and made it almost impossible for them to get rid of their bumper crop.

Mr. JARVIS. One of the points frequently made by practitioners as well as academics is about disposal versus commitment, and that many people are putting an emphasis on productive use of food aid whereby that assistance is channeled to build up their production capacity. Usually, to do that you have to have some program which is established over a number of years, with some continuity, so that you can do planning and long-term investment. Food which is disposed on an intermittent basis, given for 1 year or 2 and then taken away, frequently causes more problems than benefits.

We could also do a great deal more to help these countries by emphasizing the small farmers. That means, particularly, developing technology for those small farmers—which we don't do, or do much too little—and also by emphasizing employment. Many of the poorest are obviously those who are landless, and assistance which goes to small farmers assists them indirectly, primarily through giving more employment. These farmers use technologies which are much more labor intensive than the large farmers. So you can make a large contribution in the intermediate run through appropriate government policies which are aimed at benefiting this particular group within the agricultural sector.

Mr. Tony P. Hall. Mr. Fazio.

Mr. Fazio. If I could just add, it is probably also a benefit to domestic farmers to have a consistent export market, too, instead of having the ebbs and flows of foreign markets as we've seen in recent years.

I would like to ask a question of several of you. Perhaps the best person to start would be Dr. Halsted. We talked a bit this morning, and it is certainly a topical issue, about population control. There have been some changes proposed in our own administration's policy in this area. My sense is we tend to look from idiological perspectives in our own country.

I'm looking for some information as to when the most effective population-control programs can take place, and what interest we should have in promotion, and how much stock we should place upon them as we look to the future of the burgeoning growth in the Third World, particularly among the lesser developed countries, of populations that we heard described this morning. For example, there's an under 15—44 percent, or almost 50 percent of the total.

Mr. Halsted. I think Dr. Dewey made the point that high infant mortality does not solve the problem of population control, since the first indication of the improverished parents is to replace the dead child with another. From the UNICEF report, it is apparent that population control and spacing the intervals between children has a major impact on reducing infant mortality, and, subsequently, reducing overall illness and mortality for the population.

So, your question relates to where the proper target for emphasis on population control? I agree that education, in particular on birth-control measures and the need to space out their families, is absolutely essential.

Ms. Dewey. I'd just like to add that I think that one can't expect people to limit their families until they are economically able to do so and still have some security and a livelihood. Many poor families rely on their children to work their land later in life or to provide other sources of income. And also, as was mentioned, if there's a high mortality of their children, they need to have a large family in order to make up for that. So, I think that you can't necessarily encourage family planning until people have security to have small families. And many studies have shown that when they do have that security, they will voluntarily limit their family size.

There are some exceptions to that; for example, where there are cultural reasons for people to have large families, and, in particular, to have large numbers of male children. And I think education can go a long way in working on those aspects. But I think the economic aspects of limiting families has to be a part of any emphasis on family planning.

Mr. TONY P. HALL. We want to thank you for your time and for your excellent testimony. As we stated today, we might have some questions that we would like to submit to you for response. Thank you for coming.

We will start now with the third panel, Dr. Allen Marr, dean of the graduate studies and research office at the University of California at Davis, and Dr. Irma Adelman, professor of agricultural economics with the College of Natural Resources at the University of California at Berkeley will discuss the fundamental role universities can take to alleviate world hunger. They will place particular emphasis on title XII, the famine prevention and freedom from hunger section of the Foreign Assistance Act of 1961.

STATEMENT OF ALLEN G. MARR, DEAN, GRADUATE STUDIES AND RESEARCH, UNIVERSITY OF CALIFORNIA AT DAVIS

Mr. MARR. Mr. Chairman, members of the committee, ladies, and gentlemen, I am Allen G. Marr, as you've heard dean of graduate studies and research of the University of California at Davis. Since 1975, I've been responsible for executive management of international programs on the Davis campus. I'm a bureaucrat.

The Davis campus of the university is one of the leading universities in international programs in the United States. Our students are drawn worldwide, our faculty have studied in most of the countries of the world. And currently, as you've heard, we have programs in Egypt, Morocco, Kenya, Mexico, Brazil, Peru, and Indonesia.

We were the first university to enter into a host-country contract and the first to manage a collaborative research support program under title XII. Our international programs have been mainly in technical agriculture. In Egypt, we introduced tomatoes, as you've heard much about, established facilities for propagation of olives and dates, restored beekeeping, increased rice yields. In western Kenya, we are introducing the dairy goat. In Peru, we are working to improve the flocks from the highland range. All of these programs have involved collaborative research with local scientists and the training of students to become the next generation of scientists as well as the direct transfer of, we hope, useful technology to these developing countries.

To a lesser extent we've been involved in policy and economic analysis—as Dr. McCalla mentioned this morning. In Egypt, we've collaborated with Egyptian economists to examine such matters as price policy, farm labor, trade, and marketing. This effort has not only produced policy analyses for use by the Egyptian Government but also trained a whole new generation of economists who are continuing this important work.

Unfortunately, less often we have worked with the farmers in the sense of developing a real understanding of the basis of the choices they make in their daily lives—choices which I'm convinced are collectively critical to the future nutritional welfare of their country.

Research universities such as the University of California are centers of inquiry. Our mission is the search for new knowledge and understanding. We can be expected to be successful participants in international development only insofar as our participation connects to that central mission. There is much that we can do collectively, but there is very much more that we and other universities are simply unable to do.

One of the reasons that the Davis campus began its organized international programs was the assumption that such engagement would offer our faculty and our students an opportunity for scholarship and for a broader perspective of contemporary issues; and this objective certainly has been achieved. Another reason was the humanitarian and moral consideration that we might help mitigate hunger. In fact, in 1974, just before we began our organized international programs, the campus published a report entitled "The Hungry World—A Challenge to Agriculture," in which the population and food status of the world were projected into the future by a task force of faculty from several fields. This study had a great deal to do with our choice of greater engagement in international affairs. Thus far, the effects of our efforts in reducing hunger have been, to say the least, marginal.

In considering ways in which this and other universities might be more effective in an overall strategy to relieve hunger let me ask that we focus not on global strategies or on the immediate relief of hunger in a country in crisis but on a country with chronic malnutrition: Too many people, too little food. Technical assistance to the agricultural sector may yield more food but alleviation of hunger, if it occurs at all, will likely be short lived. The gains made will be lost to an increasing population.

In its simplest terms a strategy might involve some combination of population limitation, trade to produce foreign exchange to import food, and increased domestic food production. Even in its simplest terms such a strategy would involve several entities: The foreign government, the U.S. Government, international agencies such as FAO and the World Bank, scientists and scholars from U.S. universities collaborating with counterparts in the foreign country. The role of U.S. universities would be not only the familiar one of providing technical assistance but also to develop and analyze economic and social policy options. The main difference between this sketch and most of our present programs is that the focus is not singularly on food production but on all of the main factors which affect the nutrition of the people. The Davis campus has just now a team of faculty planning such a program.

Mr. Chairman, members of the committee, hunger is terrible beyond description. I spent my childhood on an Indian reservation in Oklahoma in the 1930's. I attended a one-room school with a potbelly stove on which boiled a pot of beans. For many of the children in that school the hot lunch was most if not all the food they had for all day. Some had the swollen bellies symptomatic of chronic malnutrition. Some died later of disease which, as Dr. Halsted has pointed out, is the sequel. This is the stuff of nightmares.

Thank you.

Mr. TONY P. HALL. Thank you.

RESPONSES TO QUESTIONS FOR ALLEN G. MARR

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. One of the most important ways to increase the capacity of developing countries to combat hunger and improve agriculture is to train individuals from those countries to carry out the work of development. Do you feel that traditional Ph.D. programs provide appropriate training for foreign students from developing countries?

Answer. My answer is a qualified yes. Ph.D. training of foreign students from developing countries should be part of a total training program—see below. Ph.D. training in the United States or Europe provides the developing country with a cadre of faculty for their universities and scientists for their research institutes who can and do improve their educational and research programs and maintain contact with colleagues abroad. Countries such as Egypt, India, and Pakistan have made great advantage of Ph.D. training in Europe and the United States. In my opinion, in many of the developing countries Ph.D. training has been insufficient to support an appropriate level of indigenous education and research.

Question. Can you suggest any alternative ways to prepare foreign students to help solve problems of development?

Answer. The alternatives are many and should be selected to suit the needs of the country. For example, during the 1960's most of the graduate training of students from Latin America was at the master's level. This strategy was chosen to provide a maximum number of teachers and technicians. For many countries postdoctoral training of mid-career scientists could be used to greater advantage. Finally, I have found that training programs in the developing country for the personnel participating in collaborative research and development can be done at low cost and to great benefit.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. What are the advantages and disadvantages of universities undertaking title XII grants?

Answer. In my testimony I mentioned that benefit to our faculty and students of opportunities for scholarship and for obtaining a broader perspective of contemporary issues. These represent significant advantages to a research university. Members of our faculty who have participated in title XII programs abroad report significant benefits to their teaching and research. For some of our faculty in both the natural and social sciences the opportunity to do research and participate in development abroad is centrally important to their professional development. The main disadvantage to a university participating in a title XII grant is the effort required to comply with a myriad of regulations and practices of USAID. The administrative burden is far greater than that imposed by other Federal agencies which sponsor programs in U.S. universities. A second disadvantage results from the large and complex effort needed to provide logistical support to programs abroad.

Question. What changes would you recommend in structuring university contributions to development assistance?

Answer. First, I recommend changing the body of regulation so that universities can operate development in a manner similar to that of other federally sponsored programs. Second, I recommend logistical support from USAID missions abroad.

I take this opportunity to thank you and the members of the Select Committee on Hunger for providing me with an opportunity to testify. I consider the alleviation of world hunger as coequal in importance to the fundamental to establishing world peace. It would be an honor to be of further service to your committee.

[The prepared statement of Mr. Marr appears at the conclusion of the hearing, see p. 187.]

Mr. TONY P. HALL. Dr. Adelman.

STATEMENT OF IRMA ADELMAN, PROFESSOR, UNIVERSITY OF CALIFORNIA AT BERKELEY

Ms. ADELMAN. I have been asked to talk about the role that universities can play in the attack on or alleviation of world hunger. My message is going to be both positive and negative. First, I would like to survey the kind of instruments that have been evolved for universities to participate in the solution of the developing world's problems, and in the process, to give you my assessment of their cost effectiveness.

One instrument which was, in fact, the first instrument was contract research. What it involved is direct contract with a university to put together a team to provide technical assistance on some problem or other to some country or other. That has not been terribly effective. The reason is that, basically, universities are not well organized for the R&D phase of research. They are not well organized to sell a product, such as technical assistance. And the reason for that is systemic and not something that universities should remedy in their own structure; because to remedy it would vitiate their primary function, which is research and teaching.

The difficulties are that the nature of the system of incentives facing university professors and the talents that they possess are not well suited to the chemical assistance efforts. As to the systems of incentives, professors get brownie points for advancing the state of knowledge, not for disseminating known knowledge. What they are being asked to do in the technical assistance phase is, essentially, to take known technology and disseminate it. That does not bring brownie points in terms of scientific publications, and, indeed, it is an effort which both younger people and midcareer people at universities undertake at their own risk.

The other major reason why universities are not good at that kind of effort is that we do not have a system of accountability which is built into our structure, which would permit individual Y to undertake a contract to do something or other, using the services of colleague X, and ensure that colleague X performs according to the stipulated terms of the contract undertaken by professor Y. The employment contract of professor X is with the university, not with professor Y. Each individual in a university is a law unto himself or herself under the banner—which I support—or academic freedom. Therefore, if somebody performs even outrageously on a particular outside contract there is no way in which the university as an institution can hold him or her accountable.

Third, administrative talent is scarce—scarcest of all in universities. These kinds of projects stretch the administrative talent available even under the best of circumstances, because they involve long-term and long-range supervision under conditions which are very difficult and in which the "manager" does not have either full responsibility or full control over what's going on. He cannot hire or fire, he cannot increase or decrease compensation.

So, the upshot of it is that, in my view, the first instrument is not a good instrument for involving universities in providing technical assistance to developing countries. The same thing is, I'm afraid, even truer for title XII programs. The reasons are the ones stated plus the even greater administrative burden that is placed on the host institution or combination of institutions in trying to organize, manage, and monitor the large-scale collaborative programs which are intended for institution building and for the provision of direct technical assistance.

I'm afraid that in my experience all parties to these kinds of programs come away disappointed. The commissioning institution feels that the university has not lived up to its contractual arrangements, the host country feels that it has not gotten out of this what it is that they want, and the researchers involved in the program wish that they had had the discretion a priori not to get involved in the first place.

I'm afraid I can think of no exception to the above statement, and I would welcome being enlightened to the contrary.

The third kind of vehicle which has been established with universities is one to provide direct training and do direct research. Now, that one, to my mind, has been quite successful wherever it has been attempted. The kind of model I'm thinking of is the program established by Vanderbilt University for training, at both the masters and Ph.D. levels, of individuals from developing countries. It's a program which has been going for about 30 years, was probably the first such established in this country, and by now has in its graduates a network of current and former finance ministers, planning ministers, et cetera, spread throughout the developing world. Another such program which was also quite successful was the one that was established at Williams to provide shorter term training.

One of the most cost-effective forms of foreign assistance was the very early program which was established at Berkeley to train Indonesians, which has numbered the Indonesian Minister of Planning among its graduates, and which has successfully staffed all the major universities and programs of Indonesia. So, what I would urge the committee to consider is the establishment of one, or two, or three regional centers for that kind of training. These centers would combine both individuals from developing countries, midcareer or students, degree or nondegree, and provide training for U.S. nationals in problems of development. It would also foster research into problems of hunger, malnutrition, income distribution, and development policy.

This kind of effort is very much needed. At the moment I can think of a large number of such institutes in developing countries funded to the level of $5 million or more annually. I can think of no such institute funded at anything like that level in any of the OECD countries. What that means is that, once my generation dies out, we, in the industrial world, will have difficulty replacing the current stock of development specialists and keeping the increase in knowledge going.

The final mechanism for involving members of universities in assistance to developing countries is a mechanism which I have used, personally, often, which is that of consulting on a specific, rather well defined problem, for either AID, or an international agency, or for a host government directly. What is done is to write a special services contract with a particular friendly member, in which the individual involved undertakes a fairly specific task with a fairly specific product, and is not involved in designing, administering, and organizing the program, just in providing technical input where expertise is needed. There are no problems of organization, there are no problems of accountability. The contractor is in control and the individual faculty member involved is completely responsible for either success or failure.

What I am urging is in line with the newer forms of technical assistance, which by and large do not call for a transfer of knowledge but rather for a transfer of problem-solving ability. The best way in which universities can contribute to the development effort of LDC's is by doing that for which they are, themselves, organized and which they know how to do best; namely, teaching, and research. Their host contribution lies in training the current and next generations to solve their own development problems in their own behalf.

Mr. Tony P. HALL. Thank you.

RESPONSES TO QUESTIONS FOR IRMA ADELMAN

QUESTION SUBMITTED BY HON. MICKEY LELAND

Question. How within the traditional university framework, can career incentives and rewards be given to researchers who focus on local needs in host countries?

Answer. No response received.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. Dr. Adelman, can you, through your vast experience in poverty, agricultural development, and economic planning, comment on the capacity of universities engaged in development problems to succeed in the areas they have undertaken? In other words, what is your assessment of the American university system in producing scholars that concentrate on development studies?

Answer. No response received.

Question. What proportion of AID money is going into the hiring of indigenous scholars or technicians?

Answer. No response received.

Mr. TONY P. HALL. Questions of the witness?

Mr. Leland.

The CHAIRMAN. Mr. Chairman, thank you.

Dr. Adelman, in your opinion what can be done about the fact that university faculty working on collaborative research projects are constrained by the need to do research which they can publish in professional journals here at home?

Ms. ADELMAN. Nothing; nor should there be. What I am saying is university faculty they should not be induced to place themselves in a situation in which their own career patterns conflict with the collaberative research obligations which they have undertaken. This requires their engaging in the kinds of compromises which are not likely to satisfy either the donors nor themselves—nor their own interests. What they should do is decouple the two functions.

The CHAIRMAN. I'm sorry?

Ms. ADELMAN. Decouple.

The CHAIRMAN. Decouple.

Ms. ADELMAN. What they should do is one, provide technical assistance under a special services contract, which can be regarded as a public service activity, and in which their exposure is limited, and two, do their research as research. They should not try to pretend that technical assistance is research or that research is technical assistance.

The CHAIRMAN. How, within the traditional university framework, can career incentives and rewards be given to researchers who focus on local needs in host countries?

Ms. ADELMAN. Well, take the University of California. The University of California has three criteria for advancement. One criterion is research; the second criterion is teaching; the third is public service. Certainly, in personal advancement at the University of

California some weight is given to public service, whether in the United States or abroad. However, the ranking is: Research first, teaching second, public service third.

The **Chairman**. Thank you.

Mr. **Tony P. Hall**. Mr. Fazio.

Mr. **Fazio**. I'm interested, since we've had some brief exposure to one aspect of the CRSP this morning, in your feeling as to where this fits into the future role of the university. Do you see this as a model that we ought to be pursuing? Either of you.

Ms. **Adelman**. Well, to the extent that it is a relatively well specified kind of CRSP which meshes in with particular research and expertise interests, I can see that selective, careful use can be made of this instrument. But I caution against the kind of overarching unwieldly, not well specified kinds of CRSP's.

Mr. **Tony P. Hall**. Any comment?

Mr. **Marr**. I don't entirely agree with the position that my colleague from Berkeley has taken. I don't entirely disagree either. So, in addition to answering that particular question about CRSP's, I would like to return to the broader question of whether or not universities can effectively participate in technical assistance.

First off, it depends on what we mean by technical assistance. If it is merely the delivery of instruction in some foreign country—training programs—or technology transfer, then I think, if that's all there is, you're quite right. For some of our scholars, for those whose specialty is in animal disease, for example, work abroad may be the best choice they can make as far as furthering their own scholarship. And there may even be fields of economics—your field, I guess—in which that could be the case.

The question, really, rests on those who are in the middle ground, who are involved in programs that are, let's say, a cut above ordinary technical assistance and perhaps not the frontier of research in their field. Can it be, for them, an experience which is both personally and intellectually rewarding?

To my pleasure and surprise, those many faculty at Davis who've participated in such programs have said yes. Not every one of them has, but that has been the prevailing view, that it has been something personally, intellectually, and professionally enriching. It's a mixed bag, but some of them say it's a good thing. Again, I point out that is not merely a cut-and-dried delivery of training programs or of technology transfer, but something involving collaboration with counterparts which have some significant intellectual content.

As to CRSP we know a lot about them in the sense that we've been running the very first one there was. They are unwieldy to manage for sure. At least the one we are managing is unwieldy to manage. And it points out, I think, a matter that universities may not be the best managers of large, diverse programs.

It may well be that the motive of participation, which is optimal for our faculty, is something other than anything anyone has mentioned so far. Maybe we need a new cut at that. I am leary of extensive participation of faculty in private consulting agreements that run separate from their university life. I think there is a hazard in having too much of that. I believe the level of satisfaction of university faculty whom I know from nine different universities participating in CRSP's is very high. I still feel it is an awkward bureaucratic instrument to try to administer.

Mr. FAZIO. Allan, excuse me. I wonder if you would perhaps be saying, as I think I have heard the people with Meals for Millions say, that we do our best work when we get closest to the ground and most specifically involved with problems sometimes very unique to given regions, and perhaps some of our worst work when we're talking about broadest conceptual problems, even when you limit it to, say, a type of life style.

Now, are you saying that the university's experience, even in these projects that you've described as unwieldy, is best when its most specifically targeted to a given problem?

Mr. MARR. It's really not fulfilling the concept of the CRSP that's the problem, it's the intricate, bureaucratic detail required of a manager that I'm addressing. I think the scheme is really pretty good: The idea is to encourage faculty to undertake research of the highest sort in an area such as beans and cowpeas or sheep and goats, which have, as others have pointed out, been overlooked by scholars, by and large, and yet they're critically important to people in developing countries.

I might add that in medicine the diseases that are most serious problems in developing countries are barely touched by medical research in the United States. So in the sense that these have been vehicles for directing attention of good scholars to problems that have been sort of passed over, it's a first-rate idea. The details of management that have have been fashioned by BIFAD and USAID, and American universities, are a nightmare.

Mr. FAZIO. Well, just briefly then, if we set up an administrative agency to bring in academicians for specific research and training requirements, would the universities be as likely to participate—if we had another governmental agency, perhaps an offshoot of AID or someone else?

Mr. MARR. I'd like to duck the full weight of that question and answer a cousin of it. [Laughter.]

The cousin is: Is there a Federal agency that understands how to work with universities in this area?

Mr. FAZIO. Or vice versa. [Laughter.]

Mr. MARR. One of my friends in USAID once said that "research universities really can't work with AID." Think about that for a minute. I believe we need to have a fix here, either somewhat deeper understanding of us by them or some modification of us in order to work with them. There is a problem yet unresolved.

Mr. TONY P. HALL. Further questions?

[No response.]

Mr. TONY P. HALL. If not, thank you.

We will now hear from remaining witnesses of the third panel.

The first witness will be Gretta Goldenman. She is coordinator of food first education projects which have developed a world-hunger education curriculum for sixth grade students. Ms. Goldenman will discuss the importance of world-hunger education and will describe the sixth grade curriculum, food first and development.

Accompanying Ms. Goldenman is Judith McGovern, a teacher from Roosevelt Middle School in San Francisco. She will discuss their experience with this curriculum.

Janet Lindgram, a member of the California School Board Association, was scheduled to testify today on the world-hunger education. We have received word, though, that she is unable to testify.

Also here is Diane Brooks. She is manager of the history and social studies unit within the California Department of Education. Ms. Brooks has been involved in developing curriculums that include world-hunger education.

We also have Joyce Buchholz, the director of the schools program for the World Affairs Council in northern California and codirector of the Bay Area Global Education Project.

The last two witnesses will speak on public awareness education: Anita Mermel, director of the Overseas Education Fund, west coast division, Los Angeles, CA, and Beverly Tangri, director of research, the Hunger Project, San Francisco, CA.

We will begin with Ms. Goldenman.

STATEMENT OF GRETTA GOLDENMAN, COORDINATOR, FOOD FIRST EDUCATION PROJECT, INSTITUTE FOR FOOD AND DEVELOPMENT POLICY

Ms. GOLDENMAN. I am with the Institute for Food and Development Policy, a nonprofit research and educational center. We just published the "Food First Curriculum" in May of this year.

I want to talk today about four points: Why it is important to teach children about hunger, misconceptions about hunger that we're trying to prevent from being instilled in children, a little about the "Food First Curriculum" itself, and our experiences in introducing the curriculum into public school classrooms.

As to why it is important to teach children about hunger, I suggest that we cannot avoid the subject. As one inner city teacher told us: "These children know about hunger already. They see people taking garbage from the cans in the schoolyard, but nobody talks about it."

Not only is hunger visible but children themselves are disproportionately affected by hunger. Though one out of seven Americans overall lives below the poverty line and, thus, at risk from hunger, among children the proportion is one out of five. And for a minority child in a female-headed household, the chances of living in poverty are four out of five.

But all too often the concerns children have about hunger are not taken seriously. And the idea that hunger is an insuperable problem and that individuals can have little impact is instilled early on.

This is a tragedy, because we feel that learning about hunger and its causes can be the starting point for a deeper understanding of other social problems, and for the development of skills and attitudes fundamental to building a nation with a genuine citizen-involved democracy.

The challenge, then, is how can we talk about hunger without engendering feelings of helplessness and despair? And how can we teach children that change is, indeed, possible?

In our experience at the institute, we found that people overcome despair as they learn why hunger persists in the midst of plenty. But to get to this understanding, it is necessary to break through some of the many misconceptions about hunger, myths that are perpetuated in the media and even in texts used in the classroom.

Hunger, as we've heard various speakers affirm today, is not caused by scarcity; there is plenty of food worldwide for all. Hunger is not caused by overpopulation. There's no correlation between population density and the presence of hunger in a given society. Hunger is not caused by the laziness of the poor. To survive in a harsh world requires immense effort when you're deprived of resources.

Hunger has less to do with the physical limits of this planet than with human-created systems that perpetuate unfairness. People are hungry because they do not have access to food-producing resources, whether land, or credit, or jobs.

Since unfairness is at the root of hunger, the solution cannot be to increase food production, per se. Studies by the United Nations have shown that where the Green Revolution was introduced without addressing differences in land ownership, access to credit, or other inequities, poverty and hunger actually deepened even as crop yields went up. Foreign aid, when given to a government that is, itself, part of an inequitable system, will not reach the poor but will end up strengthening the very forces the hungry must change in order to achieve access to the resources they need. For instance, despite $3 billion poured into the Philippines in bilateral and multilateral aid over the past decade, the average Filipino has less to eat today than 10 years ago.

So, once we grasp that hunger is caused by unfairness, we begin to see that the solution to hunger is to create more equitable and democratic societies where self-reliance is encouraged and where people are ensured access to the resources they need to feed themselves. As parents and educators, we have a choice about what we teach our children. They can learn that inequity is inevitable and they can become cynical and apathetic, or we can reinforce their natural impulses toward fairness.

Since the institute's founding, we have been asked by parents and educators for materials designed for children. So, first we investigated what is available out there for children. We reviewed over 90 resources. Although many materials had excellent exercises building an awareness of hunger, very few tackled the much more difficult question of why hunger existed and what we as individuals could do. Perhaps even worse, almost all painted a picture of the Third World poor as helpless and passive, needing our assistance in order to be fed. So we decided to produce the "Food First Curriculum."

Laurie Rubin, who is here today, when a graduate student at the University of California here at Davis, conceptualized and wrote the curriculum as her masters project in community development.

The "Food First Curriculum" teaches children to ask questions about the world. It teaches that the way to end hunger is to work toward greater participation and fairness. It teaches cooperative problem-solving skills, so that the process of learning itself is part of the solution. One unit seeks to instill appreciation of different cultures and different point of view. One unit looks at farming, another at food processing and marketing.

The unit on global hunger investigates the root causes of this tragedy. One activity, for instance, looks at the relationship between population and hunger through a puppet play that demonstrates how family size is affected by different cultures. Children learn that economic necessity, not ignorance, causes parents in rural societies to have large families, and that the poor are people with dignity who deserve our respect.

"Who's Hungry in the U.S.A.?" is another unit that brings attention to how some groups of Americans are more likely to go hungry than others. A simulation game, for instance, "Making Ends Meet," helps children to understand that being unemployed or having a limited income makes it hard for people to buy enough food, even though they may be hard working and intelligent.

The last unit, "What Can We Do?" is perhaps the most important section of all. Children learn concrete citizenship skills, such as letterwriting to congressional representatives and community education. In the activity "What Does Change Mean?" children are asked to describe changes that they have seen in their own classroom during the year, and then to expand that to include changes in their neighborhoods, in their cities, their country, the world. They compare changes for the better with changes for the worse. They are asked to imagine how it feels to be an agent for change as opposed to being a recipient of change.

One teacher told us that she was moved by how powerful this activity was, because her class found out that by working together they could effect more significant changes than by working alone.

What are some of the reactions we see to the curriculum? First, that children respond enthusiastically to being asked to deal with real life and not a made-up problem. Many teachers have praised the "Food First Curriculum" for its openendedness; children are not told what to think but they're asked to deal with problems that have no easy answers. This stimulates intense classroom discussion.

Other teachers accustomed to textbooks and worksheets with specific questions and answers have found this aspect of the curriculum uncomfortably demanding. It does ask a lot of a teacher: An overview of the subject, the ability to lead discussion, and the courage to admit that one does not know all the answers.

One difficulty we've had in approaching schools and teachers about teaching about world hunger is that they're afraid of the topic because it deals with questions of values. For some teachers that carries the threat of being controversial, of moving beyond rote subjects into areas of uncertainty. To that concern we have pointed out that more and more educators today are calling for the introduction of higher thinking skills into the classroom, including synthesis and value formation.

Another difficulty we found is that public schools are under increasing pressure for accountability, and often their reaction has been to implement more rigid curricula restraints, limiting teachers' ability to use outside materials like the "Food First Curriculum". This rigidity often makes the classroom a boring and irrelevant environment for students.

I just want to contrast this with some of the experiences the children have had with the "Food First Curriculum." One teacher called some of the activities food first math and she watched her children grasp concrete mathematics, skills like percentages and graphing, unusually quickly because these skills were being applied to topics that the children really wanted to learn about.

In our efforts at the institute to get the Food First Curriculum into as many classrooms as possible, the institute is faced with a considerable challenge. As a small nonprofit center we do not have the resources of most educational publishers and must largely rely on individual teachers, administrators, and parents who are sympathetic to the issue of world hunger.

When I reflect on the larger question about how to get the issue of world hunger taught in classrooms across the country, I recall that it took nearly a decade for the gains of the civil rights movement, for instance, to be reflected in texts and classrooms across the country. So, perhaps the greatest contribution that you here on this committee can make, is to bring about a similar national awareness that hunger is, indeed, a growing crisis, that this crisis is unnecessary, and that we do have the power to change the unfairness that underlies this tragedy. This national awareness would, indeed, help concerned parents and teachers in their efforts to ensure that the facts about world hunger, as well as the skills and values that are needed to build a more fair and democratic society, reach every child in America's public schools.

Thank you.

Mr. TONY P. HALL. Thank you.

RESPONSES TO QUESTIONS FOR GRETTA GOLDENMAN

QUESTION SUBMITTED BY HON. TONY P. HALL

Question. Have you developed any other world hunger education programs or curriculums? What have been the results of these programs?

Answer. The Food First Curriculum for sixth grade students is the first educational tool developed by the Institute for Food and Development Policy specifically for use in the school classroom.

Currently we are developing and classroom testing a 2-week curriculum of teaching materials for the high school classroom based on World Hunger: Ten Myths. We hope to publish these materials for general circulation in the summer of 1985. We will also be distributing a Food First Source List for the College Classroom within the next several months, so that college instructors can more easily determine how to include material on global hunger and development issues within their courses.

However, instructors on the high school, junior college, and university levels do already use institute publications as classroom texts on a regular basis. Among the more popular resources:

1. Food first comic, written and drawn by Leonard Rifas and appropriate for junior high students on up. We have distributed 20,000 copies of our own edition, primarily to schools and to the religious community, but an additional 35,000 versions have been circulated as inserts in the New Internationalist and Seeds magazines. Next year it will also be reprinted in its entirety in the Journal of Geography, which has an audience of social studies and geography teachers.
2. World Hunger: Ten Myths by Frances Moore Lappe and Joseph Collins is our most widely circulated publication. Total number of copies in print in various editions and translations is now over half a million. This is being used successfully in high school and college classrooms across the country.
3. Food First: Beyond the Myth of Scarcity by Frances Moore Lappe and Joseph Collins with Cary Fowler is considered a comprehensive reference point for any investigation of the global food problem or other development issues. With over 200,000 copies in print in hardcover and paperback editions, it continues to be widely used in college courses ranging from agricultural economics and political science to writing and home economics.

Enclosed is a complete list of those institute publications which are regularly adopted for college coursework. Though it is difficult to give you a concrete assessment of the results of these books being used as educational resources, I do hope some of the above circulation figures will give you a sense of the demand for accurately researched and accessible educational materials on the problem of world hunger.

Note.—Material referred to retained in committee files.

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. What recommendations would you make to this committee on how we can help facilitate more public awareness on the importance of world hunger education in the schools?

Answer. In my written testimony submitted in advance of the Davis hearing, I referred to how it took nearly a decade for the gains of the civil rights movement and the push to end gender-related stereotypes to begin to be reflected in texts and other teaching materials. At this point in time, the problem of world hunger has not yet received the equivalent level of attention in the media and among the public at large, let alone within the schools of our Nation.

Our first task is to help generate this national awareness that hunger is indeed a growing crisis. But awareness that hunger exists is not enough. People need to be aware that this crisis—because human-created—is not inevitable. People need to know that charity will not end hunger and that we do have the power to bring about a more equitable social and economic system that could ensure enough food for all.

Because of the national prominence your committee holds, you are in a unique position to stimulate this public awareness—through advocating for the rights of the hungry, through investigating and speaking out about the outrage of hunger in America as well as overseas, through bold legislation which seeks to change the inequity and economic powerlessness at the root of hunger.

In addition to helping to create a national commitment to end this unfairness which would be reflected in the schools, the Select Committee on Hunger is in a position to support education about world hunger in more concrete ways. Channels for funding already exist, such as the Biden-Pell Program you mention. The key issues are:

(a) That educators be encouraged to not only promote broader awareness of other cultures, but to examine the roots of problems such as hunger; and

(b) that children, as well as adults, be encouraged to acquire the skills and the knowledge that will help them as individuals to act to change these inequities.

Question. In 1981, AID initiated the Development Education Program as directed by the Biden-Pell amendment. The Biden-Pell program responds to the recommendation from the Presidential Commission on World Hunger to increase public awareness on the issues of world hunger.

Have you requested or received any funding through the Biden-Pell program? If not, have you considered requesting for such funding?

Answer. With regard to your question about funding available through the Biden-Pell program, it has been the policy of the institute since its founding not to accept any Government or corporate funds. We feel this is necessary in order to ensure the institute's unique role as an independent research, documentation, and education center.

QUESTIONS SUBMITTED BY HON. BILL EMERSON

Question. Can you provide the committee with a description of the activities of your organization? What are your sources of funding? What was your budget in 1983 and what is it in 1984?

Answer. Attached is a copy of our Progress Report for 1984 which gives an overview of the institute's activities as an independent, not-for-profit research and education center.

Our funding comes from individual contributors, small foundations—including churches—sales of our publications, and speaking honoraria. Our budget in fiscal year 1983 totaled $637,633; for fiscal year 1984, $710,199.

Question. In addition to the educational activities of your organization described in your testimony, have you undertaken any other such activities in the past? If so, please provide the committee with a description of them.

Answer. In response to your question about any additional educational activities undertaken by the institute in the past, I attach a copy of my response to Congressman Tony Hall's question, which covers the same ground.

NOTE.—Material referred to retained in committee files.

[The prepared statement of Ms. Goldenman appears at the conclusion of the hearing, see p. 190.]

Mr. TONY P. HALL. Are you Judith McGovern.

STATEMENT OF JUDITH C. McGOVERN, TEACHER, ROOSEVELT MIDDLE SCHOOL, ACCOMPANIED BY ELIAS WELSH, STUDENT, REPRESENTING THE INSTITUTE FOR FOOD AND DEVELOPMENT POLICY

Ms. MCGOVERN. Yes. I am Judith McGovern, a teacher at Roosevelt Middle School in San Francisco.

Last semester I used the Food First Curriculum with my two sixth grade social studies classes. I was unable to complete the whole curricula, due to a lack of time, but I'd like to tell you about why I wanted to use the Food First Curriculum and share some of the results.

I'm concerned with many issues that I think students need to study in school but that are hard to approach either because they are controversial, or seem extremely difficult for sixth graders to grasp, or simply due to a lack of up-to-date interesting materials. Learning about world hunger seemed to fit into all three of these categories, so I had never approached the subject other than one-period discussions of localized events such as the drought and famine in Africa.

Our textbooks do not discuss the root causes of hunger, if, indeed, hunger is mentioned at all. At their worst they reinforce common misconceptions on why people are hungry. The most they do is mention the Green Revolution, implying that this will solve the hunger problem eventually.

For the past 5 years, I've used a textbook copyrighted in 1976. It states: "The Green Revolution is helping farmers around the world." It goes on to mention positive changes in Mexico, Pakistan, India, Turkey, and the Philippines. On another page students studied index numbers of food production for each person between the years 1961 and 1971, that indicated an increase everywhere in the world. The implication is that each person received more food; it didn't mention that in many countries the increased production due to the Green Revolution is used as export crops and poor people are no better off than what they were before.

The content is often out of date in many texts that we use. Students in my classes last year read that three-fifths of the farmers in India own less then 5 acres of land, but they didn't read that the percentage of rural people there with no land has doubled since the introduction of new technology 20 years ago.

When I saw the Food First Curriculum sampler and I talked to Laurie Rubin, the author, I was convinced that I wanted to try it. I was interested in the fact that it was cross disciplinary, not only involving social studies but also maps, language arts, and other areas. The activities looked like they would motivate my students.

The students were very enthusiastic about the curriculum. Many mentioned in June that it had been one of their favorite units during the year. They learned many new facts. For example, in the activity of if the world: were a global village of 100 persons, they were randomly divided into haves and have-nots. They moved to various parts of the room when statistics were read out. It had a great impact on them to learn that in their group of 25, only 8 would know how to read, less than 1 would go to college—we could never figure out how to get that less than 1 there—and only 12 would have all the food they needed to eat all the time. This simulation personalized the facts.

The students also learned about an alternative to competition in the cooperation squares game, where, to win, the group had to share. Some of the activities were especially challenging. A graphing activity compared population density and hunger as measured by infant mortality rate. For students to grasp that population density does not necessarily cause hunger, and hunger does not necessarily come from population density, is a major understanding. My students were able to see that there was no pattern.

Lively discussions stimulated by the activities had to be cut off at times, due to the bell. We took much longer than the suggested time to complete some activities because so many ideas were generated by this open-ended type of format. Many diverse opinions were expressed as the students explored new ways of thinking and became deeply involved in the content of the unit. A very good aspect of this curriculum is that it is not judgmental, all the opinions of the students are valued.

We ended up visiting a dairy farm and a veal lot, because there was so much interest in the subject, and also because many students had not had the experience of visiting a farm. The dairy farmer nicely illustrated the food first lesson where have all the farmers gone? by telling us about the considerable amount of land he had acquired since taking over the management from his father. Incidentally, the students paid for the trip themselves, as we have no money in our school budget for such trips.

I'd like to introduce one of my students to you, Elias Welsh. He'll fill you in on the student's perspective of the Food First Curriculum.

Elias, what activities did you enjoy the most?

E. WELSH. Well, I enjoyed the ad and commercial activity, because we had a lot of original performances and some pretty good slogans. My favorite was the Jackson Four. We made up four five-person skits and individual ads like Pippin Apple Co. Their slogan was, We do Pippins right—and many others.

Anderson Bell, a student who played the piano very well, gathered together three more students and they made up a little rhyme and jingle about the bad ingredients in junk food. That was the Jackson Four.

I loved the processed food activity where we tested—tasted—three different types of macaroni and cheese: frozen—yuck, dehydrated—OK, homemade—Um-um. We also had to figure out the cost difference per pound and solve them about food prices.

Ms. McGOVERN. Elias, did all the students share your same idea about the macaroni and cheese? Did they all agree that the homemade was best.

E. WELSH. No. Some people thought that the frozen was good. Junk yard.

The dehydrated was—some people liked that because they were used to the stuff that they have at home. That tastes like the regular stuff. And the homemade, I think, was a little bit too expensive for some people's taste buds, but they liked that.

Ms. McGOVERN. What activities made you stop and think the most?

E. WELCH. The how does the world eat? activity made me think about how the class situation was connected with the real world and that some groups really do get a lot of food and others get very little. In this activity six people got zero Hershey's Kisses, six people got one Hershey's Kiss—Oh, Ms. McGovern passed out the Hershey's Kisses. [Laughter.]

Ms. McGOVERN. Randomly.

E. WELSH. Six people got 4 Hershey's Kisses, 5 people got 15 Hershey's Kisses, and 1 person got 30 Hershey's Kisses. Most of the people who got a lot of kisses shared their fortune with the hungry. Of course, there was a select group that didn't want to share.

Ms. McGOVERN. Did your ideas about why people are hungry change at all?

E. WELSH. Well, my ideas changed because I learned about infant mortality rates and how that has to do with hunger. Before I was taught about the food first curriculum, I thought hunger was caused by over population and poorness; but having been taught, I learned the real causes are poor distribution, inability to pay back loans, and malnutrition.

Ms. McGOVERN. One thing seemed to concern many of the students in the class. They just couldn't understand why poor families in other places in the world had so many children and why they kept having many children.

Was there something in food first that helped the students understand?

E. WELCH. Well, in food first you taught us that poor people often, in rural countries, forced by customs, were married to produce as many children as the father wants, and in other places, if they can't produce a male child, they'll be thrown out of the community in shame and never be allowed to come back again. And they want to have many children because in their old age, who will be there to feed, clothe, and care for them? And also, they don't have social security like in the United States and the United Kingdom, so they need somebody to hang around. [Laughter.]

Ms. McGOVERN. Elias, are there any other activities that you would like to describe?

E. WELCH. OK. The petroleum palace activity was one where we pretended to go to the restaurant and received a menu. The menu had no prices. The prices would depend upon how much energy was used for feeding, storing, transporting, and preparing, and rarity. It was based on what you thought cost less. In the end we were told the prices and had chances to subtract 10 cents everytime we explained the reasons why that food cost less than the competitive foods. We enjoyed that activity.

And, also, as Ms. McGovern has said this morning in her speech, we did the cooperation squares game. It was a game where cooperation was necessary to win, not competition. We were each given about two polygons and sat in groups of six. We had to make a square by sharing and without taking, gesturing, and talking. It was an interesting activity, because it made you think.

Ms. McGovern. Thank you, Elias.

Thank you.

Mr. Tony P. Hall. We want to thank you for your testimony. One would think that since we are on a hunger committee we would hear from a large constituency speaking out for a means to end hunger, not only in this country but in the world. This is not happening, because the constituency is so poor that they are not aware and not plugged into the various advocacy groups. For the most part, I think you've discussed a major part of the problem: It is the lack of education. It is a simple fact that 40,000 people last year died every day as a result of hunger. So, this is really important that you're starting to talk and educate people, especially students. It's great.

I'm sure that the panel will have some questions a little bit later, but thank you.

Next is Diane Brooks, manager of elementary and secondary school support services, Department of Education, Sacramento.

STATEMENT OF DIANE L. BROOKS, MANAGER, HISTORY-SOCIAL SCIENCE UNIT, CALIFORNIA STATE DEPARTMENT OF EDUCATION, REPRESENTATING BILL HONIG, SUPERINTENDENT OF PUBLIC INSTRUCTION

Ms. Brooks. Thank you. That's surely a hard act to follow, gentlemen.

I'm manager of the history/social science unit, specifically, of the California State Department of Education. Bill Honig, the California superintendent of public instruction was requested to testify at this committee regarding the subject of world hunger education in elementary and secondary school curriculum in California. This report responds to the particular request for information about existing curriculums that include education on the world hunger issue and about prospects for expanding current curriculum to include this subject. And it is my pleasure to represent Bill Honig today.

First of all I'd like to review what the existing curriculum in California could look like, and then what it does look like.

World hunger issues in grades kindergarten through 12 are most commonly addressed—or taught—through the social science disciplines. California schools use the history-social science framework, which is a document adopted by the State board of education, as a guideline for curriculum development. You have an excerpt of that attached to the testimony, and I will leave a complete copy for your committee information.

Textbooks are adopted by the State board of education for grades K through eight every 6 years, and the textbook selection criteria include the requirement that the content of those textbooks be in alignment with the framework.

In 1983, senate bill 813 was passed by the California Legislature, and this required, for the first time in 20 years, some graduation requirements for high school students in California. This bill will be effective for the graduation requirements beginning in 1987, which means that our current freshman students must have fulfilled the following years of instruction in high school, including: U.S. history and geography; world history, culture, and geography; and American Government, civics and economics.

In addition, in June 1983, the California State Board of Education adopted model graduation requirements which were called raising expectations. I will leave a full copy of that for your committee use. This included aims, objectives, and recommended course content for grades 9 through 12, in, for history and social science, the topics that I just read to you as far as the graduation requirements. These guidelines are in alignment with the senate bill 813 graduation requirements and are similar to the framework scope and sequence.

Within the guidelines I just described, there is considerable district flexibility for determining the curriculum. So, I'd like to summarize what I've said so far: First of all, that there are now course content high school graduation requirements and that the State Board of Education provides support to districts in curriculum development, through the framework and the model graduation requirements. In California, elementary school districts receive money for textbook adoption, and at least 80 percent of those funds must be used to purchase textbooks that are adopted by the State board. Again, there is considerable district flexibility as far as curriculum is concerned, regarding the amount of time spent on a topic, the emphasis of the content that will be delivered, and how disciplines will interrelate.

That's the situation, and I'd like now to share what the possibilities are. If we took a look at the framework, of which you have an excerpt, there are many grade levels which would be most appropriate to provide opportunities for instruction on hunger issues, starting at kindergarten, where we look at the topic learning about the physical, social, and emotional dimensions of self and others which includes the study of my needs and the needs of others. So, kindergarten would be an appropriate place to start.

At grade 3, students study people as members of communities and how people rely upon one another.

At grade 6, the topic of our world, its diverse people and their societies include areas for study about needs which are common to all human beings and how peoples of the world can and do work together on common concerns.

At grade 7, the topic of the changing world provides for a broad chronological view of the major epochs in the history of mankind. Possible areas for study are famine and depression. The study of the geography of the world and how it has changed over time provides for study about climate, weather, agriculture, and the use of resources.

At the high school level, world history is studied. Looking at the historical perspective, provides for study of the development of global interdependence, the ever-changing relationship among nations and people, and critical events that affect the course of history.

Looking at the geographic perspective, that includes the relationship between physical geography and human geography in terms of changing spatial distributions of people, their activities, and their interaction with the natural environment. This includes the importance of our abundanct resources.

Now in high school, U.S. history is studied. The content includes how unlimited wants and the scarcity of resources affect customers, producers, and government. A study of historical development in contemporary roles includes agriculture.

In high school, American Government, civics, and economics is studied. Students study the responsibilities of global citizenship. Economics includes the study of unlimited wants, productive resources, scarcity, supply and demand, and the market economy, with the critical importance of agriculture.

I've talked about topics, but there are some specific disciplines within the social science, which I think bear a look to see what is the possibility of what could be done. Let's start with geography, because this has been an evolving, growing discipline.

Geography really links both the social and the physical sciences. In recent years geographers have become increasingly concerned with refining their understanding of spatial patterns of society and have broadened their discipline to include the study of problems of human welfare in areas such as hunger. So, we see that as the developing area for looking at this issue.

Let's take a look at history. Through history each situation and event is distinct but each is connected to all the historical concepts by a web—a cause-and-effect, probability, and accident. In order for students to feel a connectedness with current issues, they really should relate them to where we came from and why, and what were the various perspectives and reasons people made decisions in the past. The historical approach to the teaching of hunger is the one approach that really helps students feel a part of it.

Regarding economics, topics in economics, of course, relate to hunger naturally, particularly regarding products and services that should be produced, how much should be produced, and how goods and services should be distributed. Students need to understand concepts such as scarcity, interdependence, the examination of local, national, and global problems, the persistence of poverty, the needs of the current society balanced against future generations' essential requirements, and the organization and importance of the international economic system.

The framework is there, and I wish I could say that everything that I have just described is happening 100 percent in our school systems. And, unfortunately, it is not for varying reasons.

First of all, I think financial support has contributed to the deterioriation of educational programs, because districts, until just very recently, have felt the need to cut back in both personnel and resources. Very frequently the personnel cutbacks were curriculum specialists at a district or school. As a result, many teachers were left on their own to bring in the best of what they could.

Time had to be restricted as personnel cuts needed to be made. And as a result, periods at high schools were cut back or the length of day at the elementary school was reduced. All of those infringe on the teaching of social science, because I think what we have seen is that, fortunately, what tends to be taught in schools is what is tested. And where the important testing areas have been on reading, language and math, the social sciences seem to have been neglected. Responding to that, the California State Legislature, in senate bill 813, included social science as well as science be included in the statewide California assessment program. And, so, we are beginning to implement that requirement, starting with grade 8. And we'll see that, also, at grades 10, 12, and also, later, at grades 3 and 6. So, I think that will bring the particular importance of social science, including issues of concern such as hunger, to our attention.

I would like to address, momentarily, the resources for teaching the hunger issue for schools. Textbooks include hunger themes in three ways: From an historical approach, through the politics of hunger, or through cultural geography. And I think you can refer to the testimony we had previously to know that textbooks address this in a sporadic way.

There are support materials available for teachers, such as film strips on the history of hunger. Those are available in a fragmented way. There are certain special programs, as the hunger project, with which you are familiar. Some businesses and manufacturers provide materials. Nutrition services provide curricula materials. And we have some particular resources available to teachers, such as the World Affairs Council and Global Perspectives, the Center for Teaching International Relations, and, also, there are some university sources such as that provided for teachers from Stanford University and the University of Southern California here in California.

But, unfortunately, not every teacher has access to these. They are not always advertised or made available in the best way. Not all districts have the capacity to obtain these resources or implement them in the curriculum. So, what we are looking at is something that is very possible and work still needs to be done.

I'd like to address, now, the receptivity of students and teachers in this area. In this last week, in response to your request, we made a survey of 11 school districts in California regarding the curriculum emphasis on hunger education at the school and district level. Responses indicated that hunger was not generally included as a curriculum area beyond a curriculum topic in a course of study, and, second, that emphasis at the classroom level beyond information in textbooks depended on the interest, knowledge, and the resources of the teachers. But they did find that where it was taught, students are receptive and very interested in the issue. And I think our former testimony certainly responded to that.

The hunger issue was addressed through the health curriculum in two of the districts we contacted. Of the 11 one district had a very well articulated curriculum on this topic, and in a second there was a K–6 pilot program.

So, with that picture let's take a look at what are the prospects for expanding the current curriculums. It seems to me that the framework in the model graduation requirements which I've described provide the basis for threading the hunger issue throughout the elementary and secondary schools, through several social science disciplines, primarily history, geography, and economics. Other disciplines in the social sciences which could address hunger are: Anthropology, psychology, sociology, and ethics. Science, and health, and literature can also address the topic.

The vehicles are there, but how much emphasis is actually given to the issue is left to the discretion of the local school district. So, from here where are we going? And I'd like to describe what is happening in California.

Besides the model graduation requirements, senate bill 813 also mandated model curriculum standards, which are to be adopted by the State Board of Education by January 1, 1985. This legislative mandate would require school districts to compare their curriculum at least every 3 years to these model curriculum standards.

To be included in the point of view to these standards are a couple of issues which pertain particularly to hunger. One is the importance of addressing issues of regional, national, and worldwide concern, both controversial and noncontroversial, and providing opportunities for students to develop their creative and higher level critical thinking skills. This could be organized in a current events program where students report, analyze, interpret, speculate, and discuss information and write critically from a variety of sources while reflecting on the historical past. Also, history-social science should illustrate that individuals, groups, societies, and nations are interdependent members of larger cultural, political, and economic environments. The model curriculum standard should provide more specific content assistance to districts, which will allow for improvement for a well-organized curriculum which does not currently exist.

I see these standards as opportunities for including examples, vocabulary and topics which will provide direction toward curriculum focus on issues such as hunger. These model curriculum standards for California with greater content information should provide greater direction for textbook publishers as well. And currently, California is in a consortium with New York and with Florida, taking a careful look at the improvement of textbooks for students.

In addition, I see the schools paying much greater attention to the time spent and the content of social science as a result of the California assessement testing program which I have just described.

The hunger issue deserves a place in the curriculum, along with other important concerns of our time. And such a curriculum topic should not be addressed in a one-shot basis, but to instill the importance to the students should really be provided as recurring themes and concepts throughout grades at gradually more challenging levels for all students. The concerns of this committee for greater awareness of the hunger issue through educational programs is appreciated.

The CHAIRMAN. Thank you.

RESPONSES TO QUESTIONS FOR DIANE BROOKS

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. What role should the Federal Government take in helping to increase education on world hunger issues? And how can the Federal Government help in disseminating world hunger education in the school system?

Answer. Special grants to departments of education in each State to collect information statewide and disseminate effective programs, or develop curriculum as needed pertaining to world hunger would facilitate the process. Both this topic and nuclear education have worldwide impact and could be handled similarly.

Question. How effective is the National Diffusion Network in disseminating curriculums? Would this be an appropriate area for world hunger education to begin in the dissemination process?

Answer. The National Diffusion Network (NDN) has piloted some very creative innovations in both curriculum content and instructional methodologies. Schools or school districts may choose to adopt the programs, but participation is generally by particular interest of a teacher or a creative district curriculum specialist. The NDN could be a good place to develop model programs and priority for funding could be given to proposals for world hunger education. However, dissemination would not be as rapid or complete as grants given to departments of education for the same purpose. Through the latter, opportunities for institutionalizing the curriculum in the district programs are greater.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question. Are curriculums that have been developed within the department of education more likely to be disseminated and utilized through out the school system than curriculums developed by outside hunger and global education organizations? Why?

Answer. Yes, curriculums developed as guidelines by the State department are more likely to be utilized throughout the school system in California because of the access to statewide dissemination resources and the guiding role that is perceived of this department. There are many good curriculums developed by outside organizations, however, limited funding or limited staff for dissemination frequently prevents dissemination beyond the regional level. As the department identifies these resources, staff can share the information, but this may not be the most efficient way.

Question. In 1981, the Education Consolidation and Improvement Act was passed. As you know, this act consolidated elementary and secondary education into a Block Grant Program. This act eliminated the Federal Government's ability to fund education programs under title III—special projects—of the Elementary and Secondary Education Act of 1965.

How has the education consolidation act effected the development and funding of new educational projects such as world hunger education?

How much of the funds received under the Block Grant Program are allocated to education projects pertaining to world hunger education? What are the prospects for increasing the Block Grant funds into world hunger curriculums?

Answer. School districts have an opportunity to use chapter 2, block grant funds, for special projects under subchapter C (see attached page from the A-127D district application for funds and the manual of information). World hunger might be included in a special project on population education. Our department does not computerize the data collected on this page from the 1040 California school districts so I am unable at this time to give you a dollar amount for the category. If legislative action particularly specified issues such as world hunger education or nuclear education as special projects for block grant funds, then it would be more likely that districts would directly address the topic.

Note.—Attachments referred to retained in committee files.

QUESTION SUBMITTED BY HON. VIC FAZIO

Question. You mentioned in your testimony that part of the problem in getting world hunger education to be taught in the classroom is that the text books do not contain adequate or enough information on the subject.

What can be done about the inadequacies of the text books? How often are text books updated and by whom?

Answer. In California, the State Board of Education adopts a new framework or framework revision for each curricular area every 6 years. Textbook publishers are to use the framework as direction for textbook content and emphasis. Two years following the adoption of the framework, the State board adopts textbooks for grades kindergarten through eight. Elementary grades must use 80 percent of their State allocated textbook money for State adopted materials. A chart of the 6-year framework/adoption cycle and the 1981 history-social science framework is attached. This process varies from State to State.

In California, a reasonable place for world hunger education would be grades 7 and 10. For grade 7, inclusion of this topic in the framework would support inclusion in textbooks. Currently the State Department of Education with the assistance of an advisory committee is writing model curriculum standards for grades 9-12 to which districts will be required to match their curriculum at least every 3 years. The current framework may be followed for grades 9-12, but the standards will provide more direct guidance to textbook publishers and curriculum developers.

Ultimately, the decisions as to what is specifically taught in the classroom are the responsibility of the local governing board and the classroom teacher.

Note.—Attachments referred to retained in committee files.

[The prepared statement of Ms. Brooks appears at the conclusion of the hearing, see p. 353.]

STATEMENT OF JOYCE A. BUCHHOLZ, SCHOOL DIRECTOR, BAY AREA GLOBAL EDUCATION PROGRAM, WORLD AFFAIRS COUNCIL

Ms. **Buchholz**. I'm Joyce Buchholz. I'm with the World Affairs Council of Northern California, and today I'm representing the Bay Area Global Education Program which is the consortium of the World Affairs Council, an organization called Global Perspectives in Education at Mills College and Stanford University Center for Research in International Studies.

Our purpose is to assist schools of the San Franciso Bay Area and California to enrich their curriculum with international and cross-cultural content and to develop the knowledge, skills, and attitudes needed by graduates from the public school system to function effectively in a rapidly changing and increasingly interdependent world.

Our work takes a very broad perspective on the problem of developing a more global perspective, and is long-range and comprehensive in its approach to curricular change and the retraining of teachers. We work not with teachers in the preservice phase but people who are in the field in service training.

We believe that school programs should be conducted so that students will recognize interdependence-of-people issues and events as they interact on the economic, political, and social systems of the world, develop an awareness of current world conditions, including such factors as population growth, economic conditions, world health, resource availability and use, and trends in science and technology, major international conflicts and efforts to resolve them.

We feel that school programs should be conducted so that students will acquire problem-solving skills to deal with the inevitable conflicts and changes which occur in a complex, ambiguous, and pluralistic world. We want students to understand the history, traditions and values of American society—I should say American societies—and, also, the values, and tradition, and history of other peoples in other parts of the world, including Africa, Asia, Latin America, and the Middle East. We want students to develop an awareness that they have a unique cutural perspective that is not necessarily universally shared with other people, and to recognize the importance of communicating with people from other cultures in their own languages.

We hope that students will seek solutions to world problems, to participate in their own societies' democratic processes. The whole focus or our educational program is to prepare teachers to prepare their students to take a greater role in the decisionmaking process in the United States. That, of course, includes the foreign policy decisionmaking process.

You can see from these objectives that our program is not merely focused on education about hunger. However, to the degree that hunger is one of the prevalent conditions in the world, we try to make students aware of that condition, how hunger relates to the world's larger economic, political and ecological systems and what individuals, organizations, and governments are doing about the problem.

Throughout our work we emphasize the importance of presenting a balanced and broad range of perspectives on the issues raised and try to show the interconnections and interconnectedness of those issues. I think that one of the things that we have to keep in mind, gentlemen, is that the issue of world hunger is not a simple issue, it is a very complex issue and there are many answers to this very complex issue.

We are very disturbed, at the Bay Area Global Education Program, with the very simplistic answers that are offered students through certain kinds of curriculum, both in textbooks and that some other community organizations are preparing. While these don't do too much damage at the elementary level, at the secondary level we find that they're terribly simplistic. And to offer students simplistic answers to complex questions is not preparing them to take a greater role in the decisionmaking process in their own country, particularly the foreign policy decisionmaking process.

The Bay Area Global Education Program has a number of component parts, one of which is instructional materials. We identify the many good materials already available commercially, and there are some. We develop other new materials, we show how these materials can be easily fit into existing history, language, culture, and science courses, and then we disseminate them to a broad network of teachers. The World Affairs Council has a resource center for the Bay Area Global Education Program, which provides free materials to teachers in northern California. We ship them free of charge, and teachers return them cheaply, as cheaply as possible, to our center in San Francisco. Mostly the materials are those that are developed at Stanford University in the program that we work with, called Stanford program on international and cross-cultural education.

We also conduct a comprehensive set of leadership training programs aimed at preparing teachers and administrators to play long-term leadership roles in international education. These include: 3- and 4-week summer institutes, study tours abroad, foreign language seminars, team development workshops, local after-school and weekend workshops, and specific skills and content such as critical thinking, or, for example, Latin American cultures.

We have found that the best way to lead into issues of hunger or development, is to do so through the study of family life in other parts of the world. For example, our Stanford projects have developed units on contemporary family life in rural China, contrasting urban life styles in Brazil, and in teaching about migration in Mexico. Each of these uses a case study approach to introduce students to the way people live in other countries, including the way they work, their standard of living, and how some in each area suffer or have suffered from hunger and poverty.

Diane mentioned some of the materials that are available through the Center for Teaching International Relations at the University of Denver, and, of course, the materials that are available through Global Perspectives in Education, that we work with, are available from the New York office and are being used a great deal now in the schools.

In our program this summer, 46 teachers from the Western States as well as northern and southern California will participate in a 3-week summer institute on international economics, trade and development issues, in order to develop skills needed to help train their colleagues, because we are a teachers-teaching-teachers program on content and skills surrounding the broad topic of economics and trade. Here they will get an overall grasp of the interational economic system, a knowledge of how to teach about such concepts as foreign exchange, protectionism, comparative advantage, and development, and a chance to practice such skills as systems analysis and problem solving.

In the course of this broad overview, the problem of hunger would be addressed as one of several others; this, particularly, by experts from Stanford's Food Research Institute and political economists. Other issues, such as the debt crisis, unemployment, the role of multinationals in the developing world, will also be addressed in their institute. Speakers and participants will explore how these issues relate to each other and to international trade and investment patterns generally. Teachers will select issues and skills of special interest to them and develop presentations which can be shared with their colleagues back home. Based on previous experience this should result in some 30 or 40 workshops taking place in the coming year, involving approximately 1,500 to 2,000 teachers.

We would like to make a few recommendations for the Congress. I am going to skip a lot of this, because I think the time is short.

The CHAIRMAN. We appreciate that. By the way, your full statement will be entered into the record.

Ms. BUCHHOLZ. The Congress could greatly aid the efforts of programs such as the Bay Area Global Education Program, by adopting educational policies and programs which do the following:

Support comprehensive, long-term approaches to the study of international issues.

Support the study of issues within a historical and global context and the presentation of diverse perspectives on these issues.

Support approaches to institution building which involve universities, State and local education agencies and voluntary organizations sharing the international education concern, and policies and programs which support clear lines of accountability which ensure the materials development or leadership training projects are influenced by local schools and communities that are designed, in turn, to have an impact on local schools.

The CHAIRMAN. Thank you very much.

RESPONSES TO QUESTIONS FOR JOYCE A. BUCHHOLZ

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. How receptive have you found teachers, parents, and students to education on world hunger issues? And to what extent do you think students become more involved in world hunger issues as a result of having had education on these issues?

Answer. No response received.

Question. How much of your work is directed toward educating teachers on world hunger issues? How do you go about educating teachers on these issues?

Answer. No response received.

QUESTION SUBMITTED BY HON. TONY P. HALL

Question. What is your relationship with the Department of Education and the school districts? Do you work closely with the Department of Education in developing curriculums or do you develop curriculums independent from the Department of Education?

Answer. No response received.

QUESTION SUBMITTED BY HON. VIC FAZIO

Question. What criteria do you use in designing curriculums on developmental issues? How much of your work is directed toward education on world hunger issues? Do you see this subject area expanding within your organization? If not, why?

Answer. No response received.

QUESTIONS SUBMITTED BY HON. BILL EMERSON

Question. Can you provide the committee with a description of the activities of your organization? What are your sources of funding? What was your budget in 1983 and what is it in 1984?

Answer. No response received.

Question. In addition to the educational activities of your organization described in your testimony, have you undertaken any other such activities in the past? If so, please provide the committee with a description of them.

Answer. No response received.

[The prepared statement of Ms. Buchholz appears at the conclusion of the hearing, see p. 370.]

The CHAIRMAN. I think, at this moment, before we bring the last two people up, that we should engage in a question and answer period.

I would like to bring Elias back and Ms. McGovern. I'm going to ask my colleagues if they have any questions first.

Vic Fazio.

Mr. FAZIO. Go ahead, Mr. Chairman.

The CHAIRMAN. Elias, first of all: How old are you?

E. WELSH. I turned 12 this month, July 11.

The CHAIRMAN. You sound like a little man—well, a man—in a little boy's suit.

E. WELSH. Thank you. [Laughter.]

The CHAIRMAN. You are an incredible guy. We really appreciate your coming before this hearing.

You know, not many young people like yourself have an opportunity to testify before a congressional hearing, and you have been fantastic; and we really appreciate that.

Let me ask you: What grade are you in?

E. WELSH. I am going into seventh. This is my sixth grade teacher, Ms. McGovern—social science teacher, Ms. McGovern.

The CHAIRMAN. You might talk to Ms. McGovern and see if she can get you to skip a few grades. I think you're about ready for high school.

Let me ask you, Elias: Why do you think Ms. McGovern wants you to learn about hunger, about world hunger, and other people suffering from hunger?

E. WELSH. She wants us to learn because if we are educated about it, maybe when we grow up and turn into people like you, we'll make changes and make the world better. [Applause.]

The CHAIRMAN. Do you live here in Davis?

E. WELSH. No.

The CHAIRMAN. Where do you live?

E. WELSH. San Francisco.

The CHAIRMAN. You live in San Francisco. OK. Well, if you decide to run for Congress, move to Davis and run against Vic Fazio, don't come to Texas, please. [Laughter.]

We really appreciate your testimony, Elias. Thank you.

Ms. McGovern, have you implemented a prepared curriculum or have you designed one that closely emulates the curriculum we've learned about today?

Ms. MCGOVERN. Yes, I've used it.

The CHAIRMAN. In essence, you want the young people to learn more about this situation so that they can grow up and possibly contribute their knowledge to the alleviation of the very serious problem of hunger?

Ms. MCGOVERN. Of course. And I think that the first thing for making any kind of change is education. And we approach that in other subjects throughout the year, too. But hunger, certainly, is a very important topic for us.

The CHAIRMAN. In your classes do you have children who are possibly victimized by hunger?

Ms. MCGOVERN. Yes. That's a possibility.

One of the things that I noticed in a part of the curriculum that I wasn't able to get to because the semester ended was that Laurie Rubin, in some of the activities, had put some cautions in for exactly that sort of thing: Please be sensitive to the fact that some of your students may be in the poverty level, and be careful about this particular activity, or maybe you would want to skip this one, or maybe you would want to do it another way. There are options in that curriculum.

The CHAIRMAN. I am fascinated about what you are doing. And I would like to possibly take this idea back to Texas. I am not certain whether we've got a similar program in our curricula in the public schools there, particularly in Houston. I will certainly talk to the superintendent of schools there to inquire, because I am just fascinated. This is incredible.

Ms. Goldenman, how long has your curriculum been piloted in the various schools?

Ms. GOLDENMAN. Well, the curriculum, itself, just recently came back from the printers, in May. But we did have it piloted in various schools throughout the last school year through the use of Xeroxed copies, and had some teachers both in the East Bay and in the San Francisco school district using the curriculum.

The Chairman. Is there significant different awareness level among the by students?

Ms. Goldenman. Would you repeat that?

The Chairman. How significant is the increase in awareness by students on hunger-related issues?

Ms. Goldenman. Well, teachers have told us that the awareness level is raised in a combination of ways. One said that children stopped eating candy bars and junk food after using the curriculum. In another classroom we were told that the children measurably started cooperating with each other, and that some of the competition and some of the hassles in the classroom were reduced; which is an interesting side effect of the curriculum.

The Chairman. Is Elias typical or atypical?

Ms. Goldenman. I think Elias is definitely an exceptional student.

The Chairman. He's either going to be a politician or an actor.

Mr. Fazio. Not much difference. [Laughter.]

The Chairman. That's for sure.

Bill.

Mr. Emerson. I just join with you, Mr. Chairman, in commending this fine program. It is a fascinating educational endeavor, one of the most fascinating educational endeavors I've witnessed or heard about, and I think we need a lot more of it; probably not just limited to this particular area about which we need a lot of education, but many other subjects as well. It appears to be a very fascinating endeavor on behalf of the students, in which they participate in ways that traditional education, I suppose, does not lend itself. I think this is a very good and healthy thing, and I commend you for it.

Ms. McGovern. Could I introduce Laurie Rubin, who we've mentioned many times?

Mr. Emerson. Oh, absolutely.

Ms. McGovern. She's right here with us, and she's the person who is responsible. [Applause.]

Mr. Emerson. Mr. Chairman, I wonder if a copy of her masters thesis might be made available for the record?

Ms. Rubin, can you provide us with the masters thesis?

Ms. Rubin. Well, the masters project, itself, was the first of about five drafts of this curriculum. But I think you are looking through a copy, there, which I guess you can keep.

Ms. Goldenman. Yes. We would like to leave that curriculum with the committee.

The Chairman. Very good.

Well, without objection, very definitely the curriculum will be entered into the record.

[The curriculum referred to by Ms. Goldenman appears at the conclusion of the hearing, see p. 201.]

The Chairman. You have provided this area of the country with a valuable mechanism to increase public awareness of hunger-related issues which is now a matter of congressional history.

Ms. Rubin. I would be glad to. My father lives in Houston, so I——

Mr. Fazio. So, she's going to run against you. [Laughter.]

Mr. Chairman——

The **Chairman**. Vic.

Mr. **Fazio** [continuing]. There have been many times during my career in Government when I have been particularly concerned about one problem, and I say, Gee, you know, we've got to teach that in schools. And then I come to another one, and I say, Gee, we've got to teach that in schools. And it seems like we always deal with these problems in a specific kind of curriculum the way you have with Ms. Rubin's work. I think the testimony that we've picked up from the State department of education puts the emphasis on trying to build this kind of awareness into the entire academic year for every one of the K through 12 years; and yet, that seems to be almost impossible to do—as you have even admitted, refreshingly. It isn't happening.

And then we come to a program like the World Affairs Council is putting on, where you try to take the educator, the teacher, and expose them to the concepts, and hope that they will integrate them into their normal teaching program. So we have seen several different approaches, and I don't know how we get from here to there: Meaning how we get from the relatively low level of awareness on the issue of hunger to a point where children in all school systems, in all the schools within them, at all income levels, are getting the kind of exposure that we understand we need.

I'm just interested in hearing some of you speak from practical experience about how we get from here to there without having every teacher be suddenly provided with a curriculum that may not be available in that school district, without having the ability at State or Federal level to force anybody to do anything different in the local schools—and we don't want to have that ability, apparently, and probably correctly—or without having the ability to put every teacher in a State through your World Affairs Council summer program.

How's that for a downer? [Laughter.]

What do we do?

Ms. **Brooks**. It is a tremendous challenge, and I think it is possible if we take a look at a careful interweaving of the programs and the careful interdisciplinary approach. And as much as I hate to think that textbooks drive the curriculum, in many places, unfortunately, they are the curriculum. And, so, I would think that the first place to start is really taking a look at our current textbook situation, and then set up a network so that the resources available are readily known and districts are utilizing them so that they can enrich the curriculum appropriately with activities such as those we have just heard about.

I would really encourage the Congress in whatever way it possibly can to have school districts take a careful look at a well articulated and integrated curriculum, and that is possible. I think we're about going as far as we can in California right now, with the senate bill 813, which I have discussed, taking a look at model curriculum standards—which are not something that are going to be mandated, but if a district needs to review their curriculum against them, at least every 3 years at a public hearng, that is going to bring a district curriculum to the focus of the community. And I think that is a good place for it to be discussed.

Also, I think that this issue should be approached appropriately in an interdisciplinary way. When we take a look at wanting to produce effective citizens, you don't just do that in one one-shot deal, in one special course, one grade; you really need to take a look at a theme and have it reoccur from different perspectives, so that students at one point will get it in the geographic perspective, at another point from the historical perspective, at another from the sociological perspective, at another from the nutritional perspective, from another from the world interdependence perspective, so that by the time they graduate from high school, they have a thorough understanding and the empathy for it is built into them. I think that it really is the textbooks, the resource materials, and the overall developed curriculum that will educate our students appropriately about this.

The CHAIRMAN. Thank you.

Ms. BUCHHOLZ. I'd like to say a couple of things about what we're attempting to do on that issue. We, as I mentioned, have teachers go through our training program, and then we have them go back and reserve as teacher-trainers. And there is a multiplier factor in that model. It seems to work very well. We reach—approximately 100 people are reached by each one of the teachers who goes through our summer institute program.

I think, also, we have to consider that a lot of people who are currently teaching will be retiring in a few years, and that we find the average age of people who go through our programs approximately 53. So, they're getting on, and a lot of good people are going to be retiring soon. And, frankly, there is just not enough of a financial incentive to attract really good people into teaching anymore; $18,000 to $20,000 was OK perhaps 20 years ago; it isn't now. And we are worried about the people who are coming into the field.

I think, also, that the Congress and the State should be concerned with preservice education and putting some money into university education programs for people who are going through teacher-training programs, so that there will be more emphasis on international issues at that level. There is very little right now.

Mr. FAZIO. If I could just comment.

We've talked a lot about merit pay in recent years, and it seems to me we ought to be doing some things to provide incentives for people to take training during the summer, continuing education. Because if they do play that role for the system, of going out and affecting 100 other people, they ought to be given some additional incentive. It's not just the need for incentive, but it is, in fact, a difficulty. Younger teachers don't participate, I'm sure, in your program because they're out earning money for their families. The older teacher who has, perhaps, a little bit more ability to take a little time might be more likely to participate, which isn't to say that it isn't as valuable, but it seems to me we ought to be providing some standards.

I've been involved in a program that the University of the Pacific has in in-service teacher training for politics and government, and I think that's another kind of qualitative enhancement program. If we have standards for these programs and we give people some additional benefits if they'll make the effort, it might help.

The CHAIRMAN. Bill.

Mr. EMERSON. Ms. Goldenman, your program is so very objective and I was particularly impressed by that.

How do you get your funding for your private research and educational center?

Ms. GOLDENMAN. Well, we are funded—basically half of our funding comes from small, private donors, individual donors. We get about one-quarter of our funding from small foundations and some church money. And the remainder is from the sale of our publications. We don't get corporate or government funding.

Mr. EMERSON. You do this by just making them aware of what your mission is, is that correct?

Ms. GOLDENMAN. Right.

Mr. EMERSON. And what you hope to accomplish?

Ms. GOLDENMAN. Right. There is really a solid constituency out there. Maybe it's small, but there are people out there who really do care about hunger, and they support us.

Mr. EMERSON. Ms. Brooks, you are implementing, in a certain sense coordinating, the policies established by the legislature, is that correct?

Ms. BROOKS. Correct.

Mr. EMERSON. You are an employee of the State that is making information available, whether it's mandatory or not, about curriculum requirements?

Ms. BROOKS. Correct.

We're also responsible for articulating with the universities regarding teacher training, and also have some responsibility for developing networks for continuing, ongoing training for teachers.

Mr. EMERSON. And, Ms. Buchholz, you are with a private organization?

Ms. BUCHHOLZ. Yes.

Mr. EMERSON.Your organization seeks to influence the public school curricula, is that correct?

Ms. BUCHHOLZ. Yes, nonprofit—nonprofit, nonpartisan organization.

Mr. EMERSON. So, you do have a bias; I mean, you have a philosophy that you——

Ms. BUCHHOLZ. No; I say that if there is a bias at this table it's from the first—if there is a political bias. Not if—if that's not judge of material. The material that we work on is instructive to have a wide range of viewpoint expressed. And we are not looking at just one aspect of world hunger. And that would be the distribution side. We would be looking at trade issues and how they would relate to it. We would be looking at growing food in the local countries, International Monetary Fund, and the United States and foreign policy—in its foreign policy practices—about what kinds of aid should be going into other countries. And I'm at a disadvantage, because this is not my area of expertise. We work in a number of—we work in all areas—world cultures, area studies, and also international economics and trade, and development; but food is not my area of expertise. We rely on Stanford University's program at the research institute for our expertise in this particular subject.

Mr. EMERSON. But you are a private organization——

Ms. BUCHHOLZ. Yes.

Mr. EMERSON [continuing]. Not for profit.

Ms. BUCHHOLZ. Not for profit.

There are three organizations: The World Affairs Council Northern California, Stanford University, and Global Perspectives in Education, without political bias.

Mr. EMERSON. Thank you.

The CHAIRMAN. Thank you very much.

Elias, you and the rest of the panelists know that we have other questions that we are going to submit to you, and we are going to keep the record open for the purpose of getting your responses.

Thank you very much. Thank all of you—particularly you, Elias. Good luck to you in your political career.

For the public awareness education section of our panel we are going to hear from Ms. Anita Mermel, director of Overseas Education Fund, west coast division, Los Angeles, CA, and Beverly Tangri, director of research, the hunger project, San Francisco, CA. We want to thank you for coming, and you may proceed.

STATEMENT OF ANITA M. MERMEL, DIRECTOR, CALIFORNIA OFFICE, OVERSEAS EDUCATION FUND

Ms. MERMEL. Chairman Leland, members of the committee, I am very honored to participate at this important meeting this afternoon, and to explore with you the need for widespread public education regarding the critical issue of world hunger. For me it is indeed a personal pleasure to be addressing this particular committee, as I spent many weekends and evenings last year supporting efforts to get H.R. 15 passed, so——

The CHAIRMAN. We want to thank you for that.

Ms. MERMEL [continuing]. So, it is truly a pleasure to be here today.

I am Anita Mermel, director of the California office of the Overseas Education Fund. Headquartered in Washington, DC, OEF is a nonprofit international development organization, dedicated to collaborating with women, women's organizations and government agencies in the developing countries to improve the economic condition of low-income women. Based on 35 years of experience in over 50 Third World countries, OEF believes that women's economic productivity is so important in these countries that development cannot occur without improving their skills to participate more fully.

Today OEF focuses its technical assistance on training women, and especially poor women, in small enterprise development, farm production cooperatives and job skills for the public and private sectors.

In the United States, OEF educates Americans about global social and economic issues through focusing development education programs on carefully targeted audiences of women, and through them to the broader constituencies they can access or motivate. OEF development education programs always include long-range followup activities and action strategies. Development education is the principal mandate of the California office, which I direct, and these educational programs spread well beyond the borders of this State. They are national in scope.

Since the mid-1970's, OEF has been designing and implementing development education programs that aim to help Americans understand how actions taken in this country affect people in the Third World, and, in turn—and this is something that many Americans don't seem to grasp immediately—how Americans are increasingly affected by events overseas.

In March 1978, OEF conducted a pilot workshop in Columbia, SC, emphasizing the role and status of women in Third World countries. Two years later the National Endowment for the Humanities funded OEF's women and world issues project, providing funds to conduct similar workshops in five new cities: Austin, Phoenix, Los Angeles, Portland, and Rochester, NY. In addition to the individual successes per se of each of these workshops, a handbook was produced for use by other communities. This publication, entitled "Women and World Issues: An Action Handbook for Your Community," has been distributed and is being used widely around the country since its publication. It provides the methodological base for the project that I'll describe today. And I do have a copy here for you today that I'll leave for the committee's reference.

In 198[illegible], OEF was privileged to receive one of the first federally funded development education matching grants commonly referred to as Biden-Pell funding. In 1983, we became one of five original grantees to receive renewed funding from US AID, and just recently we were awarded a third-year continuation grant. Our new cycle of activities has just begun.

With the Biden-Pell funding, OEF has been able to capitalize on its specific expertise in the areas of women, economic productivity, and the agricultural sector in the Third World, as well as on its proven methodology for initiating long-term and self-sustaining educational processes within the United States. The resulting project—and currently OEF's most important educational activity here at home—is entitled Women and World Hunger: The Role of Women in Food Production. It is a multiyear project that includes over 10 major cities, as well as 3 entire States.

The goals of the project are: First, to increase the public awareness of the political, economic, technical, and social factors relating to hunger and poverty, particularly the roles that women play in food production throughout the Third World; second, to promote humanitarian values; third, to stimulate individual and community action aimed at eliminating the root causes of world hunger and poverty; and the fourth goal is to develop an education program on world hunger and women for use by both our targeted groups and their memberships, as well as other community groups throughout the country.

Over the past 2 years, OEF has sponsored conferences focusing on the international perspective of women as food producers in five major cities: Denver, Los Angeles, San Diego, Santa Barbara, and Tucson. The new round of activities beginning this summer include the testing of statewide models in Iowa and Connecticut. This year we will consolidate and strengthen continuing efforts in previous OEF development education project cities. OEF development education project cities.

In particular, and at the request of Austin, TX, community leaders with whom we worked 4 years ago, OEF is providing new educational materials and technical assistance for their efforts to produce a series of community forums on women and hunger throughout the year. We are also working with women in El Paso, TX and Ciudad Juarez, Mexico, to explore the potential for a new, binational, cross-border model of cooperative development education. Our discussions are well advanced with the Center for Border Studies of Northern Mexico.

Now, you may ask: Why the theme of women as food producers?

Throughout the world, women are integral participants in the food production cycle. They plant seedlings, water and weed the fields, and assist in harvesting. They are responsible for transforming the raw supplies into edible and nutritious meals for their families. For example, in Africa—and listen—60 to 80 percent of the agricultural work is done by women. There aren't many people who know about that. Until recently, however, African men were the primary targets of development programs for technical training, extension services, or improved agricultural inputs. Any developmental programs focused on women tended to focus on women's reproductive roles and not on their economic productivity.

In general, Americans do not know that women are primary food producers around the world, and that technical assistance to them can double and even triple the food they produce. Experts already agree, as we have heard today, that large scale transfers of food from the developed to the developing world is not the answer to world hunger problems. Growing more food where people live is a good beginning. Technical assistance to help local farmers, especially women farmers who grow subsistence food, is of critical importance, along with the development of simple irrigation technologies and the availability of credit.

Since women in all corners of the world, including the United States, are involved in some part of the food chain, the theme of our project, women's role in food production, has proven to spark the interest and attract the attention of diverse populations of U.S. women.

But this shared global commonality between all women, that of providing food for their families, is not enough to ignite the enthusiasm and commitment of American women. We have found that American women become really excited about the fact that women are significant food producers throughout the world. They're inspired to action by the knowledge that increasing the capabilities of Third World women in the agricultural sector will produce important advances toward solving the problem of hunger worldwide.

Frankly, American women are relieved to go beyond talk of motherhood, nutrition, and child care in the developing world, to actively discuss women's roles as economic producers in these same countries. The freshness of the theme of women's ecomomically productive roles, of their significant contributions as farmers, processors, and distributors of food, has served as a powerful linking mechanism for conferees and their planning committees alike. That's why we talk about women as food producers.

OEF follows a participatory methodology in all projects, whether here or abroad. We believe that local responsibility for and control of content and format will yield a higher level of sustained commitment from participants.

OEF's role as sponsor of this project is to serve as a catalyst, facilitator and technical advisor. As part of the start-up phase of any new city, OEF presents an overview of the issue of women and world hunger to an ad hoc group of leaders representing diverse community organizations. We then initiate a discussion regarding why Americans should be concerned and what we can do individually and as groups about these problems. We invite those present to commit to the task of educating, motivating, and involving their constituencies in the discussion and solution of this issue. Self-selected, local steering committees are then given wide latitude to design the format and content of their project activities.

OEF provides the local planners with our community action handbook which spells out the steps for planning, financing, publicizing, and executing various formats of development education events. We offer them special written materials on women as food producers, that have been prepared by OEF specifically for this project. Thanks to the Biden-Pell funding, we have been able to provide each city seed funding to cover at least the honoraria for keynote speakers, their travel expenses, and minimal printing and postage costs for each community. In kind services, goods, and additional funds have been leveraged through local community sources.

OEF returns several times throughout the planning phase, typically ranging from 6 to 8 months, to help solve any problems that have surfaced and to assist in identifying sources of information around the country that will support each communities emerging and customized project goals.

To date, most cities have opted for organizing 1 to 2 day conferences whose programs typically include one or two guest speakers, panel discussions featuring local experts, highly participatory workshops where all conferees have an opportunity to share ideas and have their questions answered. We also have related international entertainment to create empathy between cultures, and normally an introduction to foods from the developing nations are included as part of the meal breaks.

Elias, when he was talking about the Hershey Kisses being inequitably distributed, reminded me of some of the hunger simulations that local community citizens, themselves, have decided to present. The groups have been divided into first, second, and Third World countries. Food has been unevenly distributed. I want you to know that the adults were not exactly generous in the first world, either. We saw that quite clearly. Often, those that had food, kept it. Some of those who didn't have it were quite ingeneous at how they went about getting food. We observed acts of counterfitting money script, and other kinds of crazy little innovations to secure their food.

It is important to note that with OEF's methodology, the major part of the learning and motivating occurs throughout the planning stages. The final event, itself, is more like a graduation ceremony, a time to gather families and friends in celebration, to share a new awareness and to acknowledge the commencement of new actions towards solving hunger worldwide.

OEF has found, not surprisingly, that the key target groups for a program with the theme of women and world hunger are women's organizations and other associations with a special concern for the status of women. OEF is currently working with three principal types of groups.

The first grouping consists of broad-based women's organizations—church, community, and neighborhood associations, women's ethnic associations, and increasingly refugee groups.

The second group consists of entrepreneurs and corporate women.

The third and newest constituency consists of rural women in the United States, a constituency that seems highly relevant to OEF's overall organizational goals. The issues of property rights, inheritance, access to credit, educational opportunities, off-farm employment, et cetera, are all vital concerns to rural women in the United States as well as in the Third World.

These three target groups are not mutually exclusive, nor are they necessarily distinguishable by age, ethnicity, education, or economic status. The overall project audience, thus, has a broad and diverse range of perspectives.

The total number of people directly involved in the project ranges from 200 to 400 per city. Typically, from 30 to 40 organizations have collaborated at each site. Indirect impacts have been estimated from between 3,000 to 8,000 persons per city, as most of the participating organizations have widely promoted the activities among their own constituencies.

OEF is particularly interested in monitoring the indirect impacts of our recently increasing collaboration with women's business leadership groups. These women participate in policy decisions at the corporate level, and as they move into positions of even greater power—which we saw this past week—they have the potential to educate substantial sectors of corporate and government America.

As we've seen the participation of many varied organizations in this educational process is essential. In addition to the various target groups delined earlier, OEF has also actively sought the involvement of other international voluntary organizations, as well as institutions of higher learning located in the project cities.

Now, let's look at some of the benefits of this project. Based on past experience, the learning does not end when the workshops are over. The target groups effect an outreach to groups other than their own in followup activities. In all of the cities where OEF development education programs have been organized, members of the original planning committees formed subsequent core groups and have continued activities.

Followup workshops, the formation of study groups and resource centers, publications on the theme, appearances on local radio and TV talk shows, efforts to communicate with Members of Congress and the executive branch of Government, theatrical presentations, offers of volunteer work to nonprofit organizations, and visits to Third World project sites are only examples of examples of the types of followup that have occurred.

Due to the need for brevity today, I'll have to ask you to refer to the written testimony for more specific examples of the followup that we've been producing.

I'm also very pleased to point out that the written materials that OEF has prepared for our development education programs are increasingly being utilized by other organizations in their educational campaigns. This fall will be filling a void as we release a new substantive booklet on women as food producers. This publication is written in lay terms, and will serve as a supplement to our community action handbook already in wide use throughout the country. Large organizations such as Care International have already requested permission from OEF to utilize the new publication in their own evolving development education program.

Awareness of the importance of women in development is thus on the increase. No longer is the subject area of women in development seen only as feminist or equity issue: Women in development is gaining its rightful recognition as a development issue.

In closing, I'd like to take a brief look at the future. What will ultimately determine the continuing success of OEF's development education program will depend on whether the necessary funds can be generated for its continuation and growth.

Before Biden-Pell funds were available, OEF efforts to raise corporate and foundation moneys for development education programs met with an essentially negative response. The Biden-Pell amendment has provided essential if modest startup funds for our development education programs. It has also called attention to the need for such funds and to the congressional commitment to initiate the funding process.

It is our hope that the Biden-Pell moneys will continue to be made available to OEF and other private overseas development organizations, and at a higher level than at present. It is also our hope that Congress and the Agency for International Development will bend every effort to encourage private funding sources to help underwrite the cost of widespread development education programs.

Finally, it is OEF's considered opinion that development education programs should go well beyond educating Americans as to the existence and extent of the problems of Third World hunger and poverty. Americans should be helped to understand that there are recognized, practical solutions. Although the hunger problem is complex and a solution requires diverse and complimentary efforts, OEF's educational programs aim to demonstrate that food production can be significantly increased by giving women farmers the skills, the technology, and the access to credit they so desperately need.

I thank you.

The CHAIRMAN. Thank you very much.

RESPONSES TO QUESTIONS FOR ANITA MERMEL

QUESTION SUBMITTED BY HON. MICKEY LELAND

Question. In your testimony, you mention that one of the follow-up activities to your conference being done in Denver, has been to design a curriculum for local schools pretaining to women and their role as food producers. Can you tell us if this project has been completed? Is it being used in any schools? If so, what have been the results?

Answer. The Denver school-curriculum subcommittee was just established this past May, as part of the post-conference action commitments for that city. As with most volunteer activities of this nature, summer produces a 3-month recess; this committee will thus begin in full swing this fall. Its motivated membership consists of several members from the original conference steering committee, professors, and graduate students at the University of Denver. We anticipate seeing more tangible results toward spring of 1985.

Because of your interest in school curriculums on this subject, I thought you might be interested to know that the information on women as food producers that came in light at OEF's Tucson. AZ conference, May 1984, will now be incorporated into the hunger education program being prepared by another Biden Pell recipient—the Hunger Action Center at the University of Arizona, Tucson. Their project focuses on high school, junior high school, and local church educators and is aimed at changing the insights and knowledge base of these educators. These teachers will be presented with curriculum models and will be trained in their use.

QUESTION SUBMITTED BY HON. VIC FAZIO

Question. Is the work of the Overseas Education Fund, disseminated overseas to women in less developed countries? Do your publications reach women overseas?

Answer. As mentioned in the introduction to my testimony, the bulk of OEF's activities are carried out in the Third World. Many of our overseas projects, especially in Africa, are focused on improving women's participation as food producers, processors, and distributors.

As our principle goal is to improve the economic condition of the Third World women, OEF publications distributed overseas are of a technological or methodological nature geared toward increasing women's participation in the economic development of their countries. OEF publications such as "Navamaga" or "Women Working Together" [1] are utilized not only by OEF staff and overseas project participants, but also increasingly by other U.S., international, overseas indigenous private voluntary organizations interested in improving womens' skills. Other OEF documents that reach women overseas are of a project-specific nature: Work plans, midterm and final evaluation reports, customized technological inputs into project development, etc.

OEF's development education program—of which our women as food producers project currently forms the most important part, is targeted to the American public, and American women in particular, and incorporates the learnings from our overseas development projects.

QUESTION SUBMITTED BY HON. TONY P. HALL

Question. How closely do you work with private voluntary organizations such as Peace Corps, Africare and other U.N. organizations? Is there a shared goal in development education and do you see this cooperation increasing?

Answer. OEF works very closely with other PVO's both in our overseas development work, and within the U.S. in the area of development education. OEF executive director, Elise Fiber Smith, has served as president of Private Agencies in International Development (P.A.I.D.) for the past several years and has been instrumental in the recently completed merger of PAID with the American Council of Voluntary Agencies (ACVA). OEF is registered with the United Nations and has official NGO status; in addition, we have cooperated extensively with FAO, the Voluntary Fund for the U.N. Decade for Women, and other U.N. affiliated organizations. OEF president Willie Campbell is a member of USAID's Advisory Committee on Voluntary Foreign AID and cochairs its Development Education Subcommittee.

In response to you specific question—yes, there is a shared goal in development education between OEF and other PVO's, and yes, not only does OEF see that cooperation increasing in the future, but there is an official policy authored by a coalition of PVO's to that effect. In my written testimony I referred to a policy paper jointly produced by P.A.I.D. and A.C.V.A. members: A Framework for Development Education in the U.S. OEF was not only very active in designing this policy, but was the originator of many of the concepts that are included therein. The PAID/ACVA policy sets out common goals for development education and puts forth both the necessity and desirability for PVO's to combine forces in this process. I am enclosing a copy of this policy for the committee's reference.

Returning to OEF's specific hunger education program, approximately 30 local organizations in each project city have come together to support this educational process by having members serve on the various planning committees or by contributing in-kind services or goods. Local chapters of international and U.S. PVO's working overseas such as CARE, the Peace Corps Service Council, Meals for Millions, numerous UNA chapters, VIISA, Africare, the Hunger Project, Direct Relief International, Los Ninos, etc. have all been instrumental in supporting the planning and implementation of our conferences. Many of these same organizations have been principal actors in the post-conference action programs.

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[1] NOTE: The OEF publications "Navamaga": Training Activities for Group Building, Health, and Income Generation and Women Working Together for Personal, Economic, and Community Development, a handbook of learning activities can be requested for the Select Committee's use by calling OEF headquarters at (202) 466-3430.

Note.—Enclosure referred to above retained in committee files.

QUESTIONS SUBMITTED BY HON. BILL EMERSON

Question. Can you provide the committee with a description of the activities of your organization? What are your sources of funding? What was your budget in 1983 and what is it in 1984?

Answer. OEF's primary goal is to improve the economic condition of low-income women in the developing nations. The key to OEF's 37 year success story has been to give women the skills to change their own lives while contributing to the economic development of their communities and countries. We do this in variety of ways: Through initiating long-term, small enterprise development and jobs programs; by strengthening local organizations through providing short-term training in small enterprise management, credit program expansion, practical market analysis, and how to get access to funds; by promoting self-help for refugees; by involving U.S. business women in our project development and funding; and by increasing the public understanding in the United States of these issues. It is toward this latter goal that OEF's development education program, and specifically our women as food producers project, is oriented.

OEF sources of funding consist of the U.S. Government, foundations, corporations, and individuals. Forty-five percent of fiscal year 1984 funding came from private sources: Foundations, corporations, and individual donors. Fifty-five percent came from the U.S. Government, primarily from USAID.

OEF's fiscal year 1983 budget totaled $1.5 million; fiscal year 1984 which just ended June 30, totaled $1.6 million.

Question. In additon to the educational activities of your organization described in your testimony, have you understaken any other such activities in the past? If so, please provide the committee with a description of them.

Answer. As briefly mentioned in my written testimony, several OEF development education activities served as precedents to the women as food producers project. In March 1978, OEF conducted a pilot workshop in the U.S. emphasizing the role and status of women in Third World countries, helping participants from the Columbia, S.C., area to gain a personal understanding of global interdependence through contrasting and comparing women's issues in their community and overseas. Two years later, the National Endowment for the Humanities funded OEF's women and world issues project providing funds to conduct similar workshops in five new cities: Austin, Phoenix, Los Angeles, Portland, and Rochester, N.Y. The goals of this five-city project were to educate 1,000 men and women regarding the global interrelationship of women's roles, problems, values, and aspirations amid cultural diversities, and to assists local organizations, to communicate to their constituencies a greater understanding of how local and international women's issues impact their community as well as national policies. The handbook entitled Women and World Issues: An Action Handbook for Your Community was produced as a result of the National Endowment's grant, has been distributed and used widely around the country since its publication, and has formed the methodological basis for OEF's current women as food producers project.

[The prepared statement of Ms. Mermel appears at the conclusion of the hearing, see p. 379.]

The Chairman. Dr. Tangri.

STATEMENT OF BEVERLY TANGRI, DIRECTOR OF RESEARCH, THE HUNGER PROJECT, ON BEHALF OF JOAN HOLMES, EXECUTIVE DIRECTOR

Ms. Tangri. Thank you, Mr. Chairman and members of the committee. My name is Beverly Tangri. My position with the hunger project is director of research. The hunger project's executive director, Joan Holmes, is currently working in London and is not able to be here today. It is my great privilege to represent the hunger project on her behalf.

I think it is fitting, in fact, that we are having this particular hearing in Davis, because not only is it the home of one of the great branches of the University of California, but also, in terms of the hunger project, in 1983, when we did a count, we discovered that one out of every four residents of Davis had enrolled in the hunger project.

The CHAIRMAN. That is incredible.

Ms. TANGRI. The hunger project is a 7-year-old, nonprofit, charitable organization whose stated purpose is to create the end of the persistence of hunger by the turn of the century, as an idea whose time has come.

Since the hunger project was established in 1977, more than 2.8 million individuals in 138 countries have enrolled themselves in the project.

And in giving you the information today, I would like to present it from the standpoint of having you aware of three emphases. The first one is that all the work that the hunger project does is couched in the context of coming from the end of hunger. In other words, we do not look at how complex the issue is nor do we look at how involved it is or how difficult to solve. Where we approach the hunger issue from is knowing that hunger can be solved as a problem, knowing that we can have the end of hunger. So, I would like to have you keep that in mind as I give the rest of my testimony.

Second, our intention is always to focus on the individual. We are aware completely that in the political process and in the institutions that we in the United States have devised, the individual is key and that the commitment that an individual brings to the work is probably the most important thing that we'll achieve.

And third, when we educate and inform individuals, we do this from the standpoint of educating and informing them for action. And it has been a great pleasure for me to hear many of the people who have testified here this afternoon indicate that their intention is to educate and inform for action.

Enrollment in the hunger project begins with individuals sharing the basic facts of world hunger in one-to-one conversations and small group meetings. Enrollment is a declaration by each individual that the end of the persistence of hunger is his or her personal responsibility.

In signing an enrollment card, the individual declares:

> The Hunger Project is mine completely. I commit myself to making the end of the persistence of hunger and starvation an idea whose time has come.

Currently, around the world, approximately 1,000 people a day make that declaration.

Individuals enroll themselves in the hunger project in their homes, in their offices, in parks, in shopping malls, on beaches and on streets—wherever they live, work, and gather.

Through the process of enrollment and by confronting the issue of hunger, perhaps for the first time, each individual gives himself or herself the opportunity to take a stand for the end of hunger and to express that stand in whatever way is appropriate.

In study after study—and I'm sure most of you have read all of these by now—national and international commissions have assured us that there is absolutely no reason why hunger cannot end.

They have come to the conclusion that humanity possesses the resources, technology and know-how to end hunger on our planet. And they tell us what we are lacking is the necessary will or commitment to get the job done. Some of those commissions include: The Presidential Commission on World Hunger, the National Academy of Sciences, and the Brandt Commission.

The hunger project's purpose is to create the individual will, the popular and political commitment that will result in the eradication of the persistence of hunger over the next 16 years. And in order to measure this purpose, The hunger project has set as its goal an infant mortality rate of 50 or less in every country of the world by the year 2000.

The IMR is the number of deaths of infants under 1 year of age per 1,000 live births.

There are several organizations, including UNICEF, the World Health Organization and the Overseas Development Council, who have chosen an IMR of 50 or below as the indicator of whether or not a country is meeting its basic needs including adequate nutrition.

The adoption of this measure by the hunger project allows us to focus our activities and be more clear about the impact of the work that we are doing.

I would like to talk with you a little bit about the activities that the hunger project has undertaken.

Our activities are designed to educate and inform people about the fact that hunger exists, it doesn't need to, and that individuals can make the difference in ending it.

The hunger project raises public awareness about the issue of hunger and encourages and supports individual and community participation in the work of ending it.

At the moment, the hunger project's activities are carried out on an ongoing basis in 20 countries, and they range from: Austria, Australia, Belize, the British Isles, Canada, to Nigeria, Sweden, Switzerland, West Germany and the United States.

The explosion of the hunger project on a global basis is one of the things, I think, that is extremely heartening in looking at the end of the persistence of hunger, because it seems to have just jumped national boundaries and cultural differences. When people hear about it, the hunger project settles into that country and there are very few difficulties communicating the message. The publications that we have are translated by volunteers in that area, and they then become part of the hunger project in Sweden or the hunger project in Japan, or whichever one we are talking about.

The specific activities that have been developed primarily in the hunger project in the United States are:

The ending hunger briefing is a 4-hour presentation which enables participants to know the essential facts about hunger, indicates where the world now stands in the process of ending hunger, and invites individuals to look at what they will do to further the process of ending hunger. It makes the complex issue of hunger an accessible, confrontable problem.

Since the ending hunger briefing was first presented in January 1982, almost 150,000 people have participated in it in the United

States, including more than 67,000 high school students. The ending hunger briefing is also conducted on a regular basis in Canada and the British Isles.

Not only do school and college students take it, but people from all walks of life participate with the briefing—health workers, laborers, journalists. I'm sure that we've had practically one of any and every occupation take the briefing.

The ending hunger briefing was developed by the hunger project in partnership with experts in the fields of hunger and international development. It is not, however, analysis and discussion alone, rather it informs people about hunger in a way that they have an experience of the issue and are moved to take action.

For example, individuals who have participated in the briefing have, among other things, written to their Congressmen, have written to local media about the issue, have participated in TV and radio programs on this subject, have sponsored children from developing countries, have joined the Peace Corps after the briefing, or have joined other voluntary organizations and participated with them. They have become volunteers at local food banks, and they have taken the briefing into other schools and communities.

The ending hunger briefing is conducted by more than 300 hunger project volunteers who have completed a rigorous training program to enable them to present the material effectively. At this point we are taking the ending hunger briefing to one more level and beginning to train school teachers in school districts to present the briefing themselves. We believe that this will enable us to reach many more students just as effectively.

In addition to the ending hunger briefing, we have a series of publications. The emphasis of the publications is primarily grassroots, but we also endeavor to reach key opinion and policy makers with some of the publications that we have.

Let me tell you a little bit about them, and I will leave samples for you so that the committee can be aware of the work we do.

Three times a year the hunger project publishes its newspaper, A Shift in the Wind. This is the world's largest-circulation publication on hunger, and it is sent to more than 1.5 million households. In addition, special mailings of each issue go to tens of thousands of leaders and key opinion makers around the world.

Recent editions of the newspaper have focused on Africa and its problems, have focused on the United Nations, the progress that we are making in ending hunger and the decline in hunger-related deaths.

We also publish for key opinion-makers World Development Forum. It is a semimonthly newsletter which goes to more than 10,000 individuals in the news media, development organizations, government, and corporate and academic communities.

The Forum has reported on a wide variety of topics and is edited by Peggy Streit, who is a Washington, DC based journalist who edited the newsletter when it was published by the U.S. Agency for International Development.

The hunger project has just recently launched a new publication called the Hunger Project Papers, a series of occasional papers on subjects of particular interest to scholars and development experts. The first paper, entitled the Decline in Hunger-Related Deaths, was written by Dr. Roy Prosterman, professor of law at the University of Washington and an eminent authority on world hunger. More than 11,000 copies of this first paper were distributed in the United States and selected countries abroad.

We also make a special effort to educate and inform our donors through a monthly series of pamphlets. We have an arrangement whereby individuals contribute to the hunger project on a monthly basis through our financial family. When the mailing goes out each month to remind individuals that their pledge is due, we also enclose a small pamphlet which educates them on the facts of hunger. Some of these small pamphlets have included information on Public Law 480 Food for Peace Program, the Peace Corps, Sarvodaya—the grassroots movement in Sri Lanka that has helped transform rural life there—and the Brandt Commission.

In 1985, the hunger project will publish its first book entitled Ending Hunger: An idea whose time has come. This publication will be a comprehensive discussion of the major issues critical to humankind in its endeavor to end hunger. Issues that will be explored in depth will include: Population, food, national security, foreign aid, and the new international economic order. Differing viewpoints on each issue will be presented.

The book is geared for grassroots participants who are working to end hunger and, we believe, will make the complex issue of hunger and the debate surrounding it much more accessible. In addition, we believe it will be a very valuable resource for educators, policy makers, media representatives, members of private voluntary organizations, and community leaders. And in listening to the testimony here today, I believe it will also serve a valuable function as a textbook in senior level highschools and at universities and colleges.

The hunger project was created in recognition of, and in partnership with, the thousands of individuals and organizations working toward the alleviation of hunger. Although it was first launched in the United States, as I've already said it's an endeavor that is an expression of the personal commitment of millions of individuals living in nearly every country in the world.

To further this objective, more than 3,000 committed individuals in approximately 250 communities around the world take part on a weekly basis in the hunger project's grassroots network. The grassroots network of volunteers have programs that include everything from enrollment in ending hunger briefings to enrolling other individuals, creating public awareness, and, in addition, working with other volunteers to provide individuals an opportunity to play an active role in making the end of the persistence of hunger a reality.

I'm going to drop out some of the examples that will give you some idea of what they do, and, instead, conclude by saying that each year between 13 and 18 million human beings die as a result of hunger and hunger-related diseases on our planet. To end this tragedy once and for all will require a breakthrough in our commitment.

The creation by Congress of the Select Committee on Hunger provides an opportunity to forward the work of ending hunger. The interest and commitment of the members of this committee are very clear and these hearings are a very important step in the process.

On behalf of the hunger project, I want to thank you for the opportunity to participate in these hearings.

RESPONSES TO QUESTIONS FOR BEVERLY TANGRI

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. To what extent are the members of The Hunger Project involved in political issues that effect world hunger?

Answer. The Hunger Project is a chairtable nonprofit organization and as much does not take a partisan political stance.

This year The Hunger Project, along with 21 other private voluntary organizations, sponsored The World Hunger Information Center at the Democratic and Republican national conventions under the auspices of ACVAFS/PAID.

The World Hunger Information Center provided a forum for Democrats and Republicans to speak out on world hunger and delegates were given information packets on the facts about world hunger and the work that is being done to end it.

In addition, as part of the Hunger Project's educational activities, issues of the Hunger Project newspaper, A Shift in the Wind (ASITSW), have focused on issues related to the political process. For example, ASITW No. 8 drew attention to the findings of the Presidential Commission on World Hunger. Issue No. 11 concentrated on informing readers about the Cancun Summit. Issue No. 15 focused attention on some of the U.N. agencies and the work they are doing to forward the end of hunger.

The Hunger Project has no members as such. However, there are more than 2.4 million people who have enrolled in The Hunger Project in the United States by signing a card in which they declare: "The Hunger Project is mine completely. I commit myself to making the end of the persistence of hunger and starvation an idea whose time has come." Individuals in the U.S. who have committed themselves to the end of hunger often take the opportunity to participate in the democratic process. Some of these individuals communicate with their elected representatives about the end of hunger; some may support particular bills in Congress; still others write letters to the editor and to representatives and administrators on relevant issues.

Question. Do you see this activity increasing?

Answer. The activities of the Hunger Project, outlined above, which you will note are essentially educational in nature, will increase.

QUESTIONS SUBMITTED BY HON. TONY P. HALL

Question How is The Hunger Project funded?

Answer. The Hunger Project is funded entirely by private contributions.

Our major program to generate funds is called the financial family. Currently there are approximately 16,000 donors who contribute between $10 to $1,000 on a monthly basis. Seventy-eight percent of the donors contribute $10 month, for a year or longer. Many individuals have committed to donate their money until the end of hunger.

We also raise money through our contribution meeting program and through our major gifts program. The latter is for donors who wish to contribute $10,000 or more a year.

One of the principles on which The Hunger Project is based is that it is a project of individual and personal responsibility. Our aim is to raise funds in a way that people everywhere have an opportunity to contribute. In 1983 more than 50,000 people funded the work of The Hunger Project.

Question. Have you received or requested any Biden-Pell grants for education programs you have developed on world hunger issues?

Answer. The Hunger Project recognizes that the availability of Biden Pell Grants has contributed substantially to the work of development education, however, we have neither requested nor received any Biden-Pell grants for our education programs.

QUESTION SUBMITTED BY HON. VIC FAZIO

Question. Based upon The Hunger Projects experience in the area of educating the public on world hunger issues, what in your judgment is the best means of increasing public awareness on world hunger issues?

Answer. In our experience the best means of increasing public awareness on world hunger issues is to adopt a multifaceted approach aimed at different sectors of the public.

The sectors which we have selected are:

(1) The general public;

(2) The Hunger Project constituency which includes the more than 3 million people enrolled globally, more than 2.4 million in the United States; the 175,000 people who have participated globally in the Ending Hunger Briefing Program, approximately 152,000 in the United States; over 16,000 monthly donors and over 1,000 active volunteers in the United States; and

(3) Hunger response organization, the academic community, the U.N. and development agencies, the media, government and other opinion and policymakers.

In our effort to increase public awareness we use various media and technologies for each sector. These include, but are not limited to:

General public: Radio and TV public service announcements, billboards, bumper stickers, newspaper advertisements, posters, buttons, bus and car cards, T-shirts, calendars, marathons, bike rides and other sporting events, slide shows, films, The Ending Hunger Briefing.

The Hunger Project constituency: A Shift in the Wind, The Ending Hunger Briefing, monthly educational brochures for our donors, World Development Forum, the process of enrollment, conferences and telephone calls.

Key opinion and policymakers: A Shift in the Wind, World Development Forum, The Hunger Project Papers, conferences, special briefings.

While the means of communicating about world hunger is vital to raising public awareness, we at The Hunger Project operate from the principle that the most effective and compelling way to raise public awareness is to communicate the message that the end of hunger is achievable and that the individual makes a difference. When individuals know this, they are able to participate in a way that makes a difference.

QUESTIONS SUBMITTED BY HON. BILL EMERSON

Question. Can you provide the committee with a description of the activities of your organization?

Answer. In addition to the activities described in my testimony, a description of the activities of the Hunger Project is provided in our annual report. I am pleased to provide the committee with a copy of our 1982 report and will send a copy of our 1983 report as soon as it is available.

Question. What are your sources of funding? What was your budget in 1983 and what is it in 1984?

Answer. The source of funding for The Hunger Project is the contributions of individuals. The budget for 1983 was $5.8 million. The budget for 1984 is currently $6.97 million.

Question. In addition to the educational activities of your organization described in your testimony, have you undertaken any other such activities in the past? If so, please provide the committee with a description of them.

Answer. Yes, we have undertaken educational activities in the past.

(1) 1979—Education for Action Days: A day-long presentation to over 4,000 people across North America which focused on educating members of the communities on hunger-related issues. Participants were encouraged to continue their education on an on-going basis and to take actions appropriate to them in ending the persistence of hunger. The presentations were led by The Hunger Project volunteers and addressed by leaders from other hunger response groups. The activities for the day were coordinated with local hunger response groups.

(2) 1979-Cambodia Crisis: The Hunger Project's first public awareness project around a single issue was launched in November 1979 in response to the crisis in Cambodia.

In this campaign The Hunger Project sponsored public service advertisements in newspapers across the country. Nearly $1 million in contributions was raised from these advertisements for agencies providing relief aid in Cambodia and Thailand.

(3) 1980-81—Hunger in East Africa: In November 1980, a fact-finding delegation organized by The Hunger Project visited Somalia and Kenya to assess at first-hand the hunger and refugee crisis in East Africa.

Led by hunger project executive director, Joan Holmes, the delegation visited food camps and met with representatives of governments, voluntary organizations, and U.N. agencies.

Upon their return, The Hunger Project delegates undertook a campaign to bring the situation in East Africa to the attention of the people of North America by:

Placing public service announcements with more than 600 radio stations;

Briefing Members of Congress and testifying before a congressional subcommittee;

Making public educational presentations in major U.S. and Canadian cities;

Communicating about East Africa to people enrolled in The Hunger Project; and

Producing a documentary film entitled Hunger in East Africa.

The Cancun Summit (1981): In 1981, The Hunger Project undertook to make people aware of the summit of world leaders taking place that year at Cancun.

The Hunger Project used the occasion of the Cancun Summit to educate our constituency on the North-South dialog, the Brandt Commission and the New International Economic Order. We sent a special pamphlet to our monthly donors. We also published a special issue of the newspaper A Shift In The Wind, which focused on the summit.

World Food Day: The Hunger Project is a member of the National Committee for World Food Day in the United States. In participating in World Food Day activities we aim to create awareness of the ability of our planet to feed itself. Our volunteers give hundreds of media interviews and briefings, school presentations and participate in community rallies. In addition, there are countless unique observances ranging from all day workshops to special messages on the Good Year blimp.

In August 1982, we launched a World Food Day Campaign with a special issue of A Shift In The Wind for the campaign. Several thousand volunteers participated in World Food Day activities in more than 100 communities in North America and around the world.

Symposia Sponsored by The Hunger Project: The Hunger Project has twice sponsored and conducted a major international symposium about ending hunger.

The first symposium was held at the Tarrytown Conference Center, N.Y., 1978. It focused on the evidence that hunger can be ended and identified what individual participants would do to further that goal.

The second symposium in Glen Cove, NY, was titled "Ending Hunger: The Power and Potential of the Hunger Community." Held in June 1980 the symposium was attended by 100 key opinion makers and included addresses by, among others, James Grant and Buckminister Fuller. The focus of the symposium was the development of action plans in areas such as public education, famine, international aid, and nongovernmental organizations.

[The prepared statement of Ms. Tangri appears at the conclusion of the hearing, see p. 395.]

The CHAIRMAN. Thank you, Dr. Tangri and Ms. Mermel. And I want to thank you, and your organizations, for helping create this select committee. Your organizations worked very diligently and we appreciate your commitment to alleviating hunger and malnutrition.

I have a couple of questions, and then we'll conclude our hearing.

Ms. Mermel, what response have you had as a result of your conferences on women and hunger?

And to what extent do the participants remain actively involved in world hunger issues?

Ms. MERMEL. We've seen different types of results as far as the people who have participated in these projects.

To begin, I'd like to give you an example of a woman who actually walked off the street into our conference that we had at UCLA in Los Angeles a few months ago. She thought she was attending just to hear a particular speaker that she had heard about before, a renowned expert on these issues. She thought she would just attend from 9 until 10 a.m. Well, she spent the whole day there, the whole evening there, and left at about 10 p.m. that evening. She felt that she had found a home, she had found a family. She really felt that everyone there was so integrated, intertwined, they knew each other well, and she just latched onto the excitement. And that's true, there was a lot of excitement; because it wasn't just an event, it was the result of 9 or 10 months of planning, of many, many individuals representing many, many organizations coming together. It was that type of experience, of a celebration.

Now, one of the results that we have seen is that a lot of the organizations who participate have a tremendous number of constituents, not only in the cities where we've worked but statewide and across the country. In Denver, CO, for example, we worked very closely with the American Association of University Women. They brought in their whole statewide chapter system into helping plan the Denver project, and members arrived at the final conference from throughout the State. We hadn't designed it that way; it ended up being a statewide project, however.

Now, out of that experience and out of several dispersed DEF staff and board contacts with national AAUW leaders, many women in the AAUW are excited. They are now taking OEF's women as food producers project to the State of Iowa. They came up with the idea and established the initial contacts for OEF in that State.

That's an example of the networking, the snowballing effect, of what is happening. Resulting from their participation in our Denver project, the League of Women Voters now wants to develop the project throughout the State of Connecticut.

A Mexican woman who came to our conference in Tucson 2 months ago also became excited about the concept. She represents the center for Border Studies of Northern Mexico and had no prior contact with OEF or this project before. Well, she came up with the idea of let's do this in El Paso and Cindad Juarez, Mexico and see what happens.

Well, great, we'll do a cross-border model. * * * 3 months later, we are actually exploring this new binational concept.

Women really have networking down pat in this country. I think there is no end to this project. I mean, it just keeps snowballing over and over again.

Your other question was about involvement. To give you an example, the women who worked on our planning committees back in 1980—in the five cities where our first round of development education programs occurred—are still working on projects involving women and world issues. And a case in point of that is the Austin, TX, group. As in other cases, they came to us with a new followup concept. They have come up with a $3,000 grant from a private foundation, and now they want to explore the issue of women and world hunger. We will be giving them a little technical assistance in that area throughout the upcoming year.

And that demonstration of long-time commitment is also happening in some of the other cities where we've worked before, in San Diego and Santa Barbara and others. So, we are really excited about the prospects of this project, even if Biden-Pell funds end next year. Our initial project had been written as a 3-year program and we have hopes to expand that. But even if those funds were to end, we just think that with the phenomenal networking we've been able to establish over the last 2½ years, that this program will not end.

The **Chairman**. Thank you.

Dr. Tangri, can you explain, based on the hunger project's experience, the major obstacles that you have faced in trying to increase public awareness on world hunger issues?

And what solutions are there to these problems?

Ms. **Tangri**. In terms of the major obstacles, I think that we have not faced a lot of obstacles. I think we have found that having a commitment to get the information out there, has actually achieved a phenomenal increase and a phenomenal heightening of awareness.

If I were to look at the one thing, I think, that may actually be inhibiting the furthering of this kind of awareness, it would be that people sometimes get charmed or too attracted by a particular position, and instead of being willing to put aside a particular pat answer that they might have or a particular point of view, they hang onto that as opposed to being willing to move and become more aware of the issue and to adopt solutions. That would be the thing that I would like to emphasize as really of prime importance.

The other thing, I think, that keeps people from engaging with hunger in a meaningful and effective way is that they continue to look at it and they continue to work upon it as a problem. And once again, in the work that we have done, I think our saying that we know that the end of hunger is achievable puts the work that we do into an entirely different formula, into an entirely different context, and enables people to actually participate with it in a way that they feel very gratified and they feel very willing to continue; so that our volunteers, some of them, have started out with the project and are still continuing and are willing to enroll other people on an ongoing basis to work with us.

The **Chairman**. Very good.

I have other questions, however, we are running late, so I will submit them to you for your response. And the record will remain open for that purpose.

Mr. **Emerson**. I have further questions.

The **Chairman**. I want to thank everyone here, and, in particular, the University of California here at Davis, and, of course, our colleague who represents this area, Vic Fazio.

We have heard from many individuals on not only an analysis of the problems surrounding hunger but also on some solutions. We appreciate everyones cooperation and I want to impress upon the people who are present today, that, indeed, the committee will continue its efforts in Congress, toward the alleviation of hunger and malnutrition.

I want to thank everyone here for participating today. It's been an enlightening and profitable occassion. Thank you.

The committee stands adjourned.

[Whereupon, at 4:33 p.m., the hearing was adjourned.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. VIC FAZIO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

I would like to begin by welcoming my colleagues to the Fourth Congressional District and by thanking today's witnesses for their time and preparation. A great deal of work went into making this hearing a reality, and a debt of gratitude is owed to you, Mr. Chairman, to the staff of the Select Committee on Hunger, and to the staff of the International Programs Office, who have been more than helpful and who have patiently complied with the tight deadlines and extensive preparations required for holding a Congressional hearing.

The U.C. Davis campus, located in one of the most abundant agricultural areas in this country, is an appropriate setting for a hearing by the Select Committee on Hunger. As a preeminent member of the distinguished University of California system, UC Davis has a reputation for academic integrity that is appropriate to the theme of this hearing.

* * The problems of world hunger are great. Millions of people in the world today are suffering irreversible damage to their minds and bodies from chronic malnutrition.

* * A growing number of Americans are deeply concerned with the problem of world hunger. A survey of this nation's major newspapers and periodicals

reveals headlines devoted to the problems of hunger at home and abroad.

* * I see this concern reflected in the communications I receive from my constituents, and I am sure my colleagues have witnessed similar trends.

* * Yet in some ways world hunger is an enigma. For the solution is not as simple as merely "more food"-- increased production and adequate food reserves.

* * As vitally important as high productivity and emergency reserves are, they still do not provide the final solution to the problems of hunger. Over the past ten years worldwide food production has improved, yet we still face widespread malnutrition.

* * Frustrated by our own inability to adequately feed the world, we must turn to eliminating the causes of hunger: namely, poverty and insecure food supplies. This is where the contributions of our Universities and Private Voluntary Organizations are invaluable.

Rep. Vic Fazio/Page three

The very complexities that surround the causes of and solutions to world hunger make the role of educational institutions in alleviating world hunger even more important. Our Universities provide valuable food and nutrition research and -- with Private Voluntary Organizations-- are in the forefront of assistance geared towards the local needs of the developing countries. Furthermore, the educational system is an important means by which the public can be educated about the causes of world hunger. I look forward to today's discussions.

PREPARED STATEMENT OF HON. MICKEY LELAND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS AND CHAIRMAN, SELECT COMMITTEE ON HUNGER

GOOD MORNING. I AM CONGRESSMAN MICKEY LELAND, CHAIR OF THE HOUSE SELECT COMMITTEE ON HUNGER. WE ARE VERY PLEASED THAT WE ARE ABLE TO HOLD OUR FIRST INTERNATIONAL TASK FORCE HEARING HERE AT THE UNIVERSITY OF CALIFORNIA AT DAVIS, AND I WANT TO PERSONALLY THANK THE UNIVERSITY AND MY COLLEAGUE CONGRESSMAN VIC FAZIO FOR HOSTING THE SELECT COMMITTEE HEARING, IN WHICH WE SEEK TO LEARN MORE OF THE ROLE OF EDUCATIONAL INSTITUTIONS IN HELPING TO ALLEVIATE WORLD HUNGER AND MALNUTRITION.

THE SELECT COMMITTEE, WHICH BECAME OPERATIONS IN APRIL OF THIS YEAR, RECOGNIZES THE NUMEROUS DIMENSIONS OF THE HUNGER PROBLEM WHICH ADVERSELY AFFECTS HUNDREDS OF MILLIONS OF INDIVIDUALS THROUGHOUT THE WORLD. THE COMMITTEE HAS AND WILL CONTINUE TO ADDRESS SUCH ISSUES AS: FOOD ASSISTANCE PROGRAMS IN THE UNITED STATES; U.S. DEVELOPMENT AND ECONOMIC ASSISTANCE PROGRAMS AND THE EXECUTIVE BRANCH STRUCTURE RESPONSIBLE FOR ADMINISTERING THE PROGRAM; WORLD FOOD SECURITY; TRADE RELATIONS BETWEEN THE U.S. AND LESS DEVELOPED COUNTRIES; FOOD PRODUCTION AND DISTRIBUTION; CORPORATE AND AGRIBUSINESS EFFORTS TO FURTHER INTERNATIONAL DEVELOPMENT; AND, POLICIES OF MULTILATERAL DEVELOPMENT BANKS AND INTERNATIONAL DEVELOPMENT INSTITUTIONS.

TODAY, I BELIEVE WE WILL BE FOCUSING ON A CENTRAL ISSUE OF GREAT INTEREST AND IMPORTANCE TO THE SELECT COMMITTEE - THAT OF INCREASING PUBLIC AWARENESS OF WORLD HUNGER, AND OF THE CONTRIBUTIONS OF EDUCATIONAL INSTITUTIONS IN PROGRAMS THAT ASSIST IN ALLEVIATING HUNGER AND MALNUTRITION.

THE COMMITTEE IS PARTICULARLY INTERESTED IN HEARING FROM OUR WITNESSES RECOMMENDATIONS THAT WOULD BETTER ASSIST CONGRESS IN STRUCTURING POLICY THAT WOULD DIRECTLY AFFECT THE POOREST OF THE POOR. IN THE PROCESS, THE COMMITTEE HAS COMMISSIONED AN ASSESSMENT OF FOOD PROBLEMS AND TECHNOLOGICAL OPPORTUNITIES IN SUB-SAHARAN AFRICA BY THE CONGRESSIONAL OFFICE OF TECHNOLOGY ASSESSMENT. IT IS OUR BELIEF, THAT NEW OR IMPROVED AGRICULTURAL TECHNOLOGIES, IF TRANSFERRED SUCCESSFULLY, CAN HAVE A SUBSTANTIAL EFFECT ON FOOD PRODUCTION AND DISTRIBUTION 10 TO 15 YEARS FROM THE TIME OF INTRODUCTION. CHANGES IN AGRICULTURAL DEVELOPMENT AND FOOD DISTRIBUTION INSTITUTIONS CAN TAKE EVEN LONGER TO BE EFFECTIVE. THUS, TECHNOLOGIES AND INSTITUTIONAL CHANGES INTRODUCED TODAY NEED TO BE APPROPRIATE FOR AFRICA 10 TO 20 YEARS FROM NOW. AT THE SAME TIME, THESE CHANGES MUST BE USEFUL AND ACCEPTABLE NOW, OR ADOPTION WILL NOT PROCEED BY THE HOST COUNTRY. WE BELIEVE APPROPRIATE FOCUS SHOULD BE PLACED ON TECHNOLOGIES WHICH THE POOREST 50 PERCENT OF THE FARMERS CAN AFFORD. SPECIFICALLY, CONSIDERATIONS MUST CONCENTRATE ON POOR PRODUCERS AS WELL AS POOR CONSUMERS.

FOR THESE AND OTHER REASONS, THE COMMITTEE IS VERY INTERESTED IN HEARING FROM OUR DISTINGUISHED PANELISTS' RECOMMENDATIONS WHICH HAVE STEMMED FROM THEIR EXPERIENCE IN THEIR PARTICULAR AREAS OF EXPERTISE.

I WOULD LIKE NOW TO INTRODUCE CONGRESSMAN TONY HALL, WHO AS CHAIR OF THE TASK FORCE ON HUNGER IN DEVELOPING COUNTRIES, WILL CHAIR OUR HEARING TODAY.

Prepared Statement of Hon. Bill Emerson, a Representative in Congress From the State of Missouri

THANK YOU MR. CHAIRMAN. I AM PLEASED TO BE HERE IN DAVIS, CALIFORNIA FOR THIS FIELD HEARING. THE OBJECTIVES AND WORK OF THIS UNIVERSITY IN THE INTERNATIONAL FIELD ARE WELL KNOWN IN THE CONGRESS.

A FORMER COLLEAGUE OF MINE WHO SERVED WITH DISTINCTION ON THE HOUSE AGRICULTURE COMMITTEE IS NOW A MEMBER OF THE BOARD FOR INTERNATIONAL FOOD AND AGRICULTURAL DEVELOPMENT (BIFAD). IN FACT, PAUL FINDLEY OF ILLINOIS WAS CO-AUTHOR WITH THE LATE SENATOR HUBERT HUMPHREY OF THE TITLE XII LEGISLATION WHICH FOSTERED THIS REMARKABLE SYSTEM OF HARNESSING THE VAST EDUCATIONAL, EXTENSION, AND RESEARCH RESOURCES OF OUR LAND-GRANT UNIVERSITIES TO HELP DEVELOP AGRICULTURE IN THIRD WORLD COUNTRIES.

THE PURPOSE OF THIS HEARING IS TO EXAMINE EFFORTS ON THE PART OF SEVERAL ENTITIES TO COMBAT WORLD HUNGER. I THINK IT IS PARTICULARLY SIGNIFICANT THAT THIS HEARING IS BEING HELD ON THE ANNIVERSARY - THE 30TH - OF PUBLIC LAW 480, THE AGRICULTURAL TRADE DEVELOPMENT AND ASSISTANCE ACT OF 1954.

THE PURPOSES OF PUBLIC LAW 480 ARE:

- TO PROVIDE HUMANITARIAN ASSISTANCE;
- TO SUPPORT ECONOMIC DEVELOPMENT WITHIN RECIPIENT COUNTRIES;
- TO EXPAND INTERNATIONAL TRADE AND DEVELOP MARKETS FOR U.S. AGRICULTURAL COMMODITIES; AND,
- TO PROMOTE THE FOREIGN POLICY OF THE UNITED STATES.

THE FIRST OBJECTIVE - FEEDING THE HUNGRY - IS THE PRIMARY FOCUS OF THE HEARING BEING HELD TODAY.

PUBLIC LAW 480 OR THE FOOD FOR PEACE PROGRAM HAS ENRICHED THE DIETS -- AND THE LIVES OF 1.8 BILLION MEN, WOMEN AND CHILDREN IN COUNTRIES ALL OVER THE WORLD.

UNDER THIS PROGRAM, THE UNITED STATES CONTINUES TO CONTRIBUTE MORE FOOD ASSISTANCE ANNUALLY TO OTHER COUNTRIES THAN ALL OTHER NATIONS COMBINED. THIS IS POSSIBLE BECAUSE OUR FARMERS HAVE ESTABLISHED AN IMPOSING RECORD OF GROWTH AND ABUNDANCE AND OUR CITIZENS HAVE AN EQUALLY IMPRESSIVE RECORD OF CARE AND GIVING.

WE ARE FORTUNATE INDEED TO HAVE THE RESOURCES TO ALLOW US TO DONATE FOOD TO COMBAT MALNUTRITION AND TO EASE EMERGENCY SITUATIONS SUCH AS FAMINE.

FOOD GRAINS AND FEED GRAINS REPRESENTED NEARLY HALF OF THE TOTAL OF $33 BILLION - THE VALUE OF PUBLIC LAW 480 SHIPMENTS. WHEAT SHIPMENTS WERE $11.8 BILLION AND FEED GRAINS $3.1 BILLION. OTHER

MAJOR EXPORTS WERE COTTON ($2.6 BILLION), SOYBEAN OIL ($2.1 BILLION) AND NONFAT DRY MILK (APPROXIMATELY $1.5 BILLION). THIS MEANS THAT UNDER PUBLIC LAW 480 MORE THAN $3 MILLION A DAY HAS GONE TO OVER 100 COUNTRIES.

I HOPE OUR WITNESSES TODAY WILL FOCUS ON WHAT HAS BEEN ACCOMPLISHED THROUGH VARIOUS GOVERNMENT AND PRIVATE AID PROGRAMS AND THEN ON WHAT THEY SEE AS THE ROLE OF EDUCATIONAL INSTITUTIONS IN COUNTERING HUNGER IN OUR WORLD.

I WOULD LIKE TO MENTION ONE OTHER AREA OF TODAY'S HEARING FOR WHICH I HAVE A DEEP INTEREST - THAT IS NUTRITION EDUCATION. WE WILL BE HEARING FROM WITNESSES AS TO THEIR INVOLVEMENT IN NUTRITION EDUCATION IN DEVELOPING COUNTRIES AND ALSO EDUCATION IN SCHOOLS IN THE UNITED STATES CONCERNING WORLD HUNGER. I HOPE THESE WITNESSES WILL ALSO COMMENT ON WHAT I FEEL IS SORELY LACKING IN OUR COUNTRY - NUTRITION EDUCATION AND CONSUMER AWARENESS, ESPECIALLY OF LOW INCOME PEOPLE FOR WHOM IT IS ESPECIALLY IMPORTANT THAT THEY STRETCH THEIR FOOD DOLLAR AND PROVIDE THEMSELVES AND THEIR FAMILIES WITH NUTRITIOUS MEALS.

OVERALL, THE ENTIRE CONCEPT OF NUTRITION EDUCATION, AS A PART OF THE EDUCATION AND TRAINING OF HEALTH AND OTHER PROFESSIONALS, IS EXTREMELY IMPORTANT. MORE AND MORE, THERE IS AGREEMENT AMONG MANY THAT NUTRITION IS AN INTEGRAL PART OF MAINTAINING THE WELL BEING OF THE POPULATION.

IT MAKES SENSE THAT THE MORE WE, OURSELVES, KNOW HOW TO STAY IN GOOD HEALTH AND TO SHARE THAT KNOWLEDGE WITH OTHERS, THE BETTER OFF WE ARE. GOOD NUTRITION IS PART OF THAT PICTURE.

I AM LOOKING FORWARD TO TODAY'S HEARING. THANK YOU MR. CHAIRMAN.

Prepared Statement of Hon. Marge Roukema, a Representative in Congress From the State of New Jersey

THIS COMMITTEE IS MEETING TODAY TO HEAR TESTIMONY ON ISSUES CRUCIAL TO THE ALLEVIATION OF WORLD HUNGER. AS THE RANKING MINORITY MEMBER OF THIS COMMITTEE I REGRET THAT I AM UNABLE TO BE PRESENT. I WILL REVIEW THESE PROCEEDINGS WITH GREAT INTEREST.

WE ARE HERE AT THE UNIVERSITY OF CALIFORNIA AT DAVIS, ONE OF THE FOREMOST AGRICULTURAL INSTITUTIONS OF HIGHER EDUCATION IN OUR COUNTRY, TO DISCUSS THE ROLE OF THIS UNIVERSITY AND OTHERS IN INTERNATIONAL FOOD AND AGRICULTURAL DEVELOPMENT. OUR PURPOSE IN COMING HERE IS TO FOCUS ON HOW THE WORK OF THE UNIVERSITY IS HELPING TO DEAL WITH THE PROBLEMS OF HUNGER WORLDWIDE. I AM SURE THAT I SPEAK FOR ALL MEMBERS IN EXPRESSING OUR INTEREST IN WHAT THE ASSEMBLED WITNESSES FROM THE UNIVERSITY COMMUNITY HAVE TO TELL US ABOUT THE CONNECTION BETWEEN THEIR RESEARCH AND HUNGER IN THE WORLD.

TITLE XII OF THE FOREIGN ASSISTANCE ACT DIRECTS THE U.S. GOVERNMENT TO MAKE MORE EXTENSIVE USE OF THE U.S. LAND GRANT AND OTHER QUALIFIED COLLEGES AND UNIVERSITIES TO CARRY OUT FOREIGN ASSISTANCE PROGRAMS. THE INTEREST OF DEVELOPING COUNTRIES IN TITLE XII PROJECTS, AS REFLECTED IN USAID MISSION REQUESTS, HAS GROWN CONTINUOUSLY. IN BOTH 1984 AND 1985 IT IS EXPECTED THAT TITLE XII PROGRAMS WILL ACCOUNT FOR APPROXIMATELY $400 MILLION OF INSTITUTION-BUILDING ACTIVITIES IN

CONTINUOUSLY. IN BOTH 1984 AND 1985 IT IS EXPECTED THAT TITLE XII PROGRAMS WILL ACCOUNT FOR APPROXIMATELY $400 MILLION OF INSTITUTION-BUILDING ACTIVITIES IN AGRICULTURE, RURAL DEVELOPMENT AND NUTRITION. THE UNIVERSITY OF CALIFORNIA AT DAVIS IS ONE OF THE LARGEST RECIPIENTS OF TITLE XII ASSISTANCE. WE LOOK FORWARD TO HEARING MORE ABOUT THE PRACTICAL APPLICATION OF THIS WORK IN FEEDING THE WORLD'S HUNGRY.

OF PARTICULAR CONCERN TO ME IS, WHAT I CALL THE "PARADOX OF HUNGER." SINCE WE PRODUCE MORE THAN WE NEED AND SPEND MORE ON FOOD AID, WHY DO WE STILL HAVE OVERABUNDANCE AND HUNGER? I HOPE TODAY THAT SOME OF OUR WITNESSES WILL BE ABLE TO SHED SOME LIGHT ON POSSIBLE SOLUTIONS TO THIS PROBLEM.

THE U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT (AID), WITH THE TECHNICAL ASSISTANCE OF THE DEPARTMENT OF AGRICULTURE (USDA), IS WORKING TO HELP COUNTRIES INCREASE FOOD PRODUCTION TO THEIR COMPARATIVE ADVANTAGE. WE ARE ASSISTING THESE COUNTRIES IN THEIR EFFORTS TO BECOME "SELF-RELIANT" - THAT IS TO SAY, PRODUCE THOSE FOODS THEY ARE ABLE TO GROW TO HELP FEED THEIR POPULATIONS AND ALSO TO STIMULATE EXPORTS TO EARN FOREIGN EXCHANGE TO PAY FOR THE IMPORTS OF FOOD THEY ARE NOT ABLE TO PROFITABLY PRODUCE THEMSELVES.

WE HAVE LEARNED A NUMBER OF LESSONS ABOUT HUNGER AND MALNUTRITION OVER THE PAST YEARS. WE KNOW THAT HUNGER IS NOT JUST AN EMPTY STOMACH. HUNGER IS AN ECONOMIC ISSUE, AND IS A DIRECT RESULT OF POVERTY. HUNGER RESULTS FROM THE LACK OF A PROPER DIET --

MALNUTRITION; THE INABILITY TO GROW ENOUGH FOOD TO FEED THE FAMILY -- PRODUCTION; THE LACK OF INCOME TO BUY FOOD -- ECONOMIC OPPORTUNITY; THE INABILITY TO GET FOOD TO THOSE WHO NEED IT -- DISTRIBUTION; AND FROM FOOD SPOILAGE FOR LACK OF PROPER STORAGE -- RESERVES. WE MUST ADDRESS ALL THESE PROBLEMS IN A COORDINATED AND CONCERTED MANNER IF WE ARE TO ERADICATE WORLD HUNGER.

IN SOLVING THESE PROBLEMS, THE ROLE OF THE PRIVATE SECTOR IS A MAJOR ONE. THE DIFFICULT ECONOMIC CONDITIONS IN THE WORLD HAVE TODAY CAUSED MANY DEVELOPING COUNTRIES TO RE-EXAMINE THEIR RESPECTIVE ECONOMIC DEVELOPMENT PHILOSOPHIES AND PRIORITIES AND TO TAKE SOME CORRECTIVE ACTIONS. I UNDERSTAND, FOR EXAMPLE, THAT SEVERAL AFRICAN AND LATIN AMERICAN COUNTRIES HAVE INCREASED EFFORTS TO TRANSFORM CERTAIN STATE-OWNED ENTERPRISES INTO PRIVATE SECTOR ENTERPRISES. USAID HAS TOLD US THAT SEVERAL COUNTRIES INCLUDING KENYA, LIBERIA, INDONESIA AND PAKISTAN HAVE BEGUN TO EXAMINE THEIR RESPECTIVE INVESTMENT AND OVERALL BUSINESS ENVIRONMENTS TO DETERMINE WHAT POLICY, LEGAL AND REGULATORY CHANGES ARE REQUIRED TO ENHANCE THE DEVELOPMENT AND GROWTH OF BUSINESS ACTIVITIES. SOME THIRD WORLD COUNTRIES PLAN TO DEVELOP PROGRAMS WHICH WILL INCREASE ACCESS OF THE U.S. PRIVATE SECTOR TO NEW MARKETS AND ENHANCE TECHNOLOGY TRANSFER AND DEVELOPMENT OPPORTUNITIES. I JOIN MY COLLEAGUES IN LOOKING FORWARD WITH GREAT INTEREST TO WHAT OUR WITNESSES TODAY HAVE TO TELL US ABOUT U.S. PRIVATE SECTOR INVOLVEMENT AND WHAT THIS COMMITTEE CAN DO TO ENHANCE THEIR ROLE IN FOOD AND AGRICULTURAL DEVELOPMENT IN THE THIRD WORLD.

THIS COMMITTEE HAS A SPECIAL INTEREST IN NUTRITION AND HEALTH. RECENT ESTIMATES INDICATE THAT 500 MILLION OR MORE PERSONS THROUGHOUT THE WORLD ARE CHRONICALLY UNDERNOURISHED. THE VAST MAJORITY OF THESE ARE IN LOW INCOME COUNTRIES WHERE POVERTY AND UNDERDEVELOPMENT ARE RESPONSIBLE FOR INADEQUATE FOOD INTAKE, A POOR HEALTH ENVIRONMENT, AND LACK OF KNOWLEDGE ABOUT GOOD NUTRITIONAL PRACTICES. THE ROLE OF THIS NATION'S UNIVERSITIES COOPERATING WITH THE U.S. GOVERNMENT IN HUMAN NUTRITION IS COMPREHENSIVE AND UNIQUE. THE NEED PERSISTS FOR ADDITIONAL UNDERSTANDING ABOUT NUTRITIONAL REQUIREMENTS, THE NUTRIENT COMPOSITION AND BIOAVAILABILITY OF FOODS AND DIETS, THE ADEQUACY AND SAFETY OF FOOD SUPPLIES, FOOD ASSISTANCE, THE NATURE OF DIETS AND EFFECTIVE MEANS OF IMPROVING DIETS OF THE POPULATION. THE EVIDENCE OF RELATIONSHIPS OF OUR DIETARY HABITS AND NUTRITIONAL STATUS TO THE PREVENTION OF CERTAIN NUTRITION-RELATED CHRONIC DISEASES MAKE IT IMPERATIVE THAT WE STRENGTHEN OUR COMMITTMENT TO HUMAN NUTRITION BOTH HERE IN THE UNITED STATES AS WELL AS IN OUR INTERNATIONAL DEVELOPMENT ASSISTANCE.

WE MUST DO MORE TO MAKE THE AMERICAN PUBLIC AWARE OF THE DIMENSIONS OF FOREIGN AID. UNDER THE BIDEN-PELL AMENDMENT, PASSED BY THE CONGRESS IN 1981, AFTER THE PUBLICATION OF THE REPORT OF THE PRESIDENTIAL COMMISSION ON WORLD HUNGER, WE SEEK TO FACILITATE WIDESPREAD PUBLIC DISCUSSION, ANALYSIS, AND REVIEW OF THE MAJOR ISSUES REGARDING WORLD HUNGER. USAID HAS REQUESTED AN INCREASE TO $2.4 MILLION FOR 1985 FROM $1.8 IN 1984 AND $1. MILLION IN 1983 FOR THIS PROGRAM. FROM MY POSITION ON THE COMMITTEE ON EDUCATION AND LABOR, I HAVE A PARTICULAR INTEREST IN ENHANCING EDUCATION AND I COMMEND THE

EFFORTS OF BIDEN-PELL RECIPIENT ORGANIZATIONS, SOME OF WHOM ARE APPEARING BEFORE US TODAY, IN THEIR WORK IN PUBLIC EDUCATION ON WORLD HUNGER.

THE TESTIMONY GIVEN TODAY WILL ASSIST US IN OUR WORK ON THE SELECT COMMITTEE ON HUNGER. NEEDLESS TO SAY, OUR COMMITTEE FACES A TREMENDOUS CHALLENGE. THESE PROBLEMS HAVE DEFIED SOLUTION FOR TOO LONG AND BROUGHT TRAGEDY AND SUFFERING TO THE LIVES OF TOO MANY. THAT IS WHY WE MUST CONTINUE TO SEARCH FOR WHAT WE IN THE UNITED STATES CAN DO TO ASSIST IN THE ALLEVIATION OF WORLD HUNGER.

PREPARED STATEMENT OF HON. TONY P. HALL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO AND CHAIRMAN, INTERNATIONAL TASK FORCE ON HUNGER

GOOD MORNING AND WELCOME TO THE SELECT COMMITTE ON HUNGER'S HEARING IN WHICH WE WILL ADDRESS THE ISSUES REGARDING THE ROLE EDUCATIONAL INSTITUTIONS PLAY IN INCREASING PUBLIC AWARENESS OF WORLD HUNDER ISSUES. WE WILL ALSO DISCUSS THE SPECIFIC CONTRIBUTIONS THAT UNIVERSITIES CAN MAKE IN HELPING TO ALLEVIATE HUNGER AND MALNUTRITION IN LESS DEVELOPED COUNTRIES.

I AM CONGRESSMAN TONY HALL, CHAIR OF THE COMMITTEE'S TASK FORCE ON HUNGER IN DEVELOPING COUNTRIES. I WANT TO BRIEFLY THANK THE GOOD PEOPLE OF THE UNIVERSITY OF CALIFORNIA AT DAVIS FOR ALLOWING US TO HOLD OUR FIRST HEARING OF THIS TASK FORCE, AND, TO CONGRESSMAN VIC FAZIO FOR BEING SUCH A GRACIOUS HOST AND VALUABLE MEMBER OF THE SELECT COMMITTEE ON HUNGER.

TODAY WE WILL BE HEARING FROM THREE DISTINGUISHED PANELS OF EXPERTS WHO WILL BRIEF THE COMMITTEE ON THEIR INVOLVEMENT IN ACTIVITIES THAT ASSIST IN ALLEVIATING WORLD HUNGER. THE COMMITTEE IS PARTICULARLY INTERESTED IN HEARING OF THEIR RECOMMENDTIONS ON HOW TO MAXIMIZE THE EFFECTIVENESS OF U.S. ACTIVITIES THAT ALLEVIATE HUNGER AND MALNUTRITION. I SHOULD EMPHASIZE THAT WE WANT TO FOCUS ON CONCRETE BENEFITS TO HUNGRY PEOPLE, RATHER THAN BENEFITS TO THE BETTER-OFF POPULATIONS IN THIRD WORLD COUNTRIES.

OUR FIRST PANEL WILL DISCUSS PROJECTS CONCERNING AGRICULTURE AND TECHNOLOGY. THE SECOND PANEL WILL DISCUSS HEALTH, NUTRITION

AND POPULATION ACTIVITIES. AND THE THIRD PANEL WILL INFORM THE COMMITTEE ON THE CONTRIBUTIONS EDUCATIONAL INSTITUTIONS CAN MAKE THROUGH BOTH PROGRAMS IN DEVELOPING COUNTRIES, AND, IN ACTIVITIES THAT SEEK TO INCREASE THE AWARENESS OF THE AMERICAN PUBLIC ON WORLD HUNGER ISSUES.

IN 1980, THE PRESIDENTIAL COMMISSION ON WORLD HUNGER RECOMMENDED A NUMBER OF STEPS THE UNITED STATES CAN TAKE REGARDING WORLD HUNGER. AS A RESULT OF A POLL THE COMMISSION SPONSORED, IT WAS LEARNED THAT MANY AMERICANS WERE NOT YET AWARE OF THE EXTENT OR SEVERITY OF THE HUNGER PROBLEM IN EITHER DEVELOPING COUNTRIES OR THE UNITED STATES. YET, IT WAS LEARNED THAT THE AMERICAN PUBLIC IS SYMPATHETIC TO THE SUFFERING OF THE HUNGRY AND POOR, THOUGH UNCERTAIN ABOUT THE MEASURES NEEDED TO ELIMINATE THE PROBLEM. IT WAS PROPOSED AT THAT TIME, THAT ONCE AMERICANS BETTER UNDERSTOOD THE CAUSES AND EFFECTS OF WORLD HUNGER, THE U.S. CAN TAKE THE LEAD AND WORK TOWARDS A FINAL ALLEVIATION OF THE PROBLEM.

I BELIEVE THIS IS AN IMPORTANT FIRST STEP IN GATHERING GREATER SUPPORT OF ACTIVITIES THAT INCREASE PUBLIC AWARENESS OF HUNGER ISSUES. I LOOK FORWARD TO HEEARING HOW WE CAN INCREASING INSTITUTIONALIZE WORLD HUNGER EDUCATION.

THE COMMITTEE WILL ALSO HEAR FROM WITNESSES REGARDING THE FUNDAMENTAL QUESTIONS OF WHAT UNIVERSITIES CAN CONTRIBUTE TO THE GOAL OF ALLEVIATING WORLD HUNGER, PARTICULARLY THROUGH TITLE XII -- THE FAMINE PREVENTION AND FREEDOM FROM HUNGER PROVISION OF THE FOREIGN ASSISTANCT ACT OF 1961 WHICH FOCUSES ON PARTS OF THE WORLD WHERE MORE THAN HALF A BILLION PEOPLE ARE HUNGRY AND MALNOURISHED. PROJECTS AND PROGRAMS SUCH AS THE ONES WE WILL BE HEARING ABOUT TODAY, ARE CONCENTRATED WHERE LOW AGRICULTURAL

PRODUCTIVITY AND RURAL POVERTY ARE ENDEMIC; WHERE BASIC INFRASTRUCTURE MAKES THE DEVELOPMENT OF EDUCATION, RESEARCH AND EXTENSION SYSTEMS SEEM ELUSIVE. AS I SAID OUR MAJOR CONCERN WILL BE: ARE CONCRETE BENEFITS BEING PROVIDED TO HUNGRY PEOPLE?

THE COMMITTEE WILL ESPECIALLY BE INTERESTED IN HEARING HOW IN ACTUALITY TITLE XII PROJECTS ARE FAIRING, PARTICULARLY SINCE IT IS EXPECTED THAT IN BOTH FY 1984 AND FY 1985 ACCORDING TO A.I.D., TITLE XII PROGRAMS WILL ACCOUNT FOR APPROXIMATELY $400 MILLION OF INSTITUTION-BUILDING ACTIVITIES IN AGRICULTURE, RURAL DEVELOPMENT AND NUTRITION, AS COMPARED TO $330.9 MILLION FOR FY 1983.

AGAIN, I APPRECIATE THE TIME AND EFFORT THAT HAS GONE INTO PREPARING THE SELECT COMMITTEE ON HUNGER'S HEARING TODAY, AND I WOULD LIKE TO THANK OUR WITNESSES IN ADVANCE FOR THEIR COOPERATION IN SHARING INFORMATION WITH THE COMMITTEE.

Prepared Statement of David W. Robinson, Associate Dean, International Program, Office of International Programs, University of California at Davis

Every day, millions of people suffer from hunger, and recent studies indicate that deaths from malnutrition are between 15-18 million each year. The problem is not a new one, but the scale of the problem is new, it is likely to worsen and the prospect of implementing solutions is decreasing. Of all the debilities that afflict mankind, hunger is one of the most agonizing. It strikes the most vulnerable first, small children, old people and women of child bearing age. The affluent demonstrate a lack of moral commitment and self sacrifice leading to complacent indifference. Governments, often posing as generous donors to the needy, pursue policies which guarantee the perpetuation of hunger. It is almost certain that within the next two decades, hunger will become a potent destabilizing force in the world.

The Human Factor

A biological phenomenon, unprecedented in the history of mankind, is currently unfolding. It is the increase in the human population of the globe. The doomsday predictions of Malthus became unfashionable long ago as planners and demographers became mesmerized by quantum leaps in agricultural production resulting from the so-called green revolution. Mankind, it was said, has always suffered the vagaries of drought, famine and pestilence and survived to produce ever more food to cope with increased demand. Such optimism, however, overlooks the power of exponential growth which applies to population dynamics but not to food production capacity. The green revolution has not stalled but it has plateaued and its potential is finite.

The battle to control population growth is not being won. It is the developed countries that have achieved zero population growth and now experience the problems of progressively aging societies. In the Third World of less developed, economically deprived countries, population growth rages out of control at levels between 2 to 4% per annum with up to 60% of the population below the age of 15. The consequences of human population growth are:

- That the earth's population has doubled in the past 50 years; it will double again in the next 25 years, and double again after that in 15 years if current rates of increase are not curbed.

- Of this vast human population, an ever increasing number will join the ranks of the undernourished, malnourished, critically starving or totally dependent unless population growth is voluntarily curtailed. If food supplies are allowed to control population growth, the sum of human misery will be incalculable.

- The natural and renewable resources of the earth cannot sustain the anticipated human population pressure. Watersheds will be damaged, forests will disappear, soil will erode, range will be overutilized, and unique plant and animal species will vanish. In some parts of the world these processes have already reached an advanced stage.

- The strain upon resources and services such as schools, roads, hospitals and other infrastructure are already so great, that the numbers of illiterate people in the Third World are actually increasing. It is well known that literacy rates are closely correlated with the social acceptance and ability to implement population control.

- It is likely that the gulf between the rich and poor within nations, and the gulf between the developed and less developed nations themselves, will widen rather than decrease, and the resulting tensions will lead to conflicts and recrimination.

An appreciation of the human factor is a necessary backdrop because the impact of practically every agricultural breakthrough made in the past 40 years has been swept away by the progression of population growth. Standards of living are not rising in the developed countries, and in the less developed countries, standards are falling disastrously as the future is mortgaged to the international banks. Moreover, the current trend toward fundamentalism in Muslim, Protestant and Caltholic thought has thrown up enormous social barriers against population control to the extent that policies of secular governments actually work against birth control. By the time these trends reverse themselves, there may be too many people for the environment to support.

The Food Factor

Predictions in the mid 1970s that in spite of rising populations, food supply could keep pace with demand have largely proved to be correct for the past decade. This is because application of known technology elevated farmers' yields in developing countries, sometimes by six to eight fold. However, it is often forgotten that much of the ground between poor yields and potential yields has already been covered; the same pace of increase in agricultural production cannot be sustained in the future. Meanwhile the powerful force of barely modified exponential growth in the population of developing countries creates the imminent potential for people to outstrip their food supply.

With respect to food, especially global perspectives on food supply and demand, the United States holds a very special place for the following reasons.

- The quiet agricultural revolution that has taken place on the North American continent in the last 150 years is unprecedented in the history of mankind. This abundantly endowed continent has been transformed by the industry and innovation of its farmers from a relatively insignificant food producer to the only food surplus region of quantitative significance in the world.

- The people of the United States now enjoy the lowest priced food relative to income of any nation in the world and also enjoy the widest variety and most sanitary standards in the food supply.

- The United States has been the most generous supplier of food surpluses for needy nations in the history of the world and not only in disaster relief, but through sustained long-term commitment. As the broker of world food surpluses, the US controls the destiny of smaller agricultural producers.

- Quite apart from its food surpluses, the US underwrites the major agencies that promote food production overseas. It is the largest single donor to the World Bank, FAO, CGIAR, OECD and the United Nations organizations.

- Food is a weapon, and as such, is more powerful than all the nuclear arsenals that threaten mankind. A nuclear holocaust is a threat we hope to postpone, but every person in every family, every day, must eat. Famine, undernourishment or malnutrition is a threat that two billion people cannot postpone--they face the reality each and every day.

- Because of the political potency of food as a weapon, it is convenient for the USA to supply first its perceived foes and then its closest allies in order to guarantee their dependency. And yet, those nations that cannot help, nor particularly threaten the USA, are often the ones with the greatest food needs, comprising "Third World" countries between latitudes 35° North and South.

It is important to understand that the nutritional requirements of people and the economic (or political) demand for food are vastly different things. The most needy are often the least able to buy and the most favoured are frequently those most feared.

The Agricultural Factor

Food production is primarily the output of agriculturalists, although not all agricultural products are food commodities, nor is all food produced from agriculture. It is a fact that of the total surface of this tiny spaceship earth, two thirds is covered by water, and that of the land surface, approximately one fifth is too cold, one fifth is too dry, one fifth is too high, one fifth is too hot. Only one fifth is ideal for food production. Actually, about ten percent of the earth's surface is cultivatable.

The development of new agricultural land is fast approaching a saturation point, and soon losses of already used land to erosion, desertification, saltation, waterlogging, urban sprawl, or exhaustion will bring the net increase of agricultural land to zero. While developing nations desperately try to open new lands, the developed countries are paying farmers to take land out of production.

Improved output of existing land may be anticipated because of new technology, improved water management and development of salt tolerant plants, but the cost/benefit of increased output may prevent application.

It is critical at this moment in time to evaluate the agricultural systems of the world and study them in a wholistic fashion rather than piecemeal so that a comprehensive food strategy can be developed and implemented. The only lasting soution to world hunger is for nations to develop food security strategies based upon self help. This means dealing with both sides of the equation, not only how much food there is for each hungry person, but how many hungry mouths there are to feed. Currently, development assistance policies are bedeviled by some glaring inconsistencies. Some examples are:

- In the intensive areas of small farm agriculture, particularly those that are in Africa and Asia, women are responsible for the major part of food production. However, the direction of extension and technology transfer efforts almost completely ignores the role of women.

- More than half of the agricultural areas of the world, particularly those that are in Africa or Latin America, are in the control of pastoralists. However, the problems of pastoralism as a way of life have been generally ignored, resulting in disasters of Sahelian proportions.

- Protection of the agricultural base is largely overlooked in national policies which focus on more intensive exploitation of fragile environments incapable of sustaining increased levels of human use. The great watersheds are deteriorating irreversibly and the vast agricultural regions they serve are faced with collapse. Parts of the great Indus River Basin, the Nile Delta and the Central Valley of California are reaching stages of advanced decay.

- Development assistance all too frequently focuses on technology transfer or production problems in agriculture, which may not be the first limiting factors. Economic policy issues relating to marketing, subsidies, incentives, price controls, import and export quotas are most frequently the first limiting factors but are rarely examined or influenced because of they are politically sensitive.

- Food distribution is highly inequitous even in a world of plenty. However, discussions of food distribution are issues almost beyond the political pale! While Western Europe continues to uneconomically produce mountains of surplus fruit and dairy products, and while the North American potential for surplus food production is so great that farmers are either being paid to remove land from production or slide into bankruptcy because of low prices, countries in the Third World face famine from deteriorating land.

There is a role for the University as an academic institution and the training ground for future leaders to become involved in studying the issues.

The Role of University

The University is an institution of higher learning and teaching. Its purpose is to seek the truth and to search for new knowledge. Its mandate is to make truth and knowledge available through teaching and extension to all.

As a major University with the largest Agriculture and Veterinary Schools in the nation and comprehensive capabilities through the schools of Law, Medicine, Engineering, Letters and Sciences, Business Administration and a Graduate Division, the Davis campus has been directly and deeply involved in the issues of hunger. A major contribution of the University throughout its history has been the individual commitment of many of its faculty to overseas programs as teachers, researchers or consultants, and particularly through their connections with scholars and the publication of their work in scholarly journals.

The University has also made important institutional commitments to issues of hunger. In 1974, a task force established on the campus published a book entitled, "The Hungry World - A Challenge to Agriculture." Among other things, this study projected the food status of the world and its population for the years 1985 and 2000, predictions which can now be compared with reality for their accuracy. Soon after this publication, the University engaged in major ventures with the United States Agency for International Development (USAID) and pioneered several new concepts with the Agency in implementing food related research programs in developing countries. Among these initiatives were:

- The first host country contract - Egypt
- The first Collaborative Research Support Program under Title XII in Kenya, Morocco, Peru, Brazil and Indonesia
- The Rice Research and Training Program - Egypt

These and other programs of the University have been described in the attached brochures.

The University of California at Davis has an enduring commitment to the issues of food, agriculture and hunger. It is presently undertaking several initiatives to study food related issues. These include plans for a task force of a multidisciplinary nature to study issues of poverty, social and political constraints as well as production-oriented technical issues that impact on world hunger, leading to a proposal for more intensive study in which all the Colleges and Divisions on campus will participate. In particular, it is hoped that graduate student research and involvement will not only provide pointers towards possible solutions, but train a cadre of people with the sersitivity and courage to implement them.

PREPARED STATEMENT OF CHARLES E. HESS, DEAN, COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES, UNIVERSITY OF CALIFORNIA AT DAVIS

Mr. Chairman:

My name is Charles E. Hess. I am Dean of the College of Agricultural and Environmental Sciences at the University of California, Davis, California and a member of the Joint Committee on Agriculture Research and Development (JCARD), a unit of the Board for International Food and Agricultural Development (BIFAD), Agency for International Development.

The Foreign Assistance Act was amended in December 1975 to include Title XII which was called the Famine Prevention and Freedom from Hunger Act. Congressman Paul Findley and Senator Hubert Humphrey were basically developing a strategy for getting the land grant colleges and universities of the United States more deeply involved in strengthening the institutional infrastructure in agriculture in the developing countries. Goals of Title XII include:

1. To build and strengthen institutional capacity and human resource skills of agriculturally developing countries, so these countries may participate more fully in international agricultural problem-solving efforts and to introduce and adapt new solutions to local circumstances.

2. To involve universities more fully in international network of agricultural science including the international research centers, the activities of international organizations, such as United Nations Development Programs and the Food and Agriculture Organization and the Institutions of agriculturally developing nations.

3. To provide program support for international agriculture research centers to provide support for research projects identified for specific problem-solving needs and to develop and strengthen national research systems in developing countries.

The passage of the Title XII legislation and its subsequent implementation about a year a half later heralded a major organized increase in the participation of US universities in international agricultural development activities. About this same time, the UC Davis Campus launched a major program with the government of Egypt and the US AID Mission in Egypt at the request of the government of Egypt. Although some times mentioned as a Title XII project, the UC-Egypt Agricutural Development Systems Project was in fact independent of the Title XII program. The Campus is playing important roles in a number of Title XII programs. It is the lead university in the Small Ruminants Collaborative Research Support Program (CRSP) and is a participant in the beans and cowpeas CRSP and has helped in the planning for an aquaculture and a nutrition CRSP. The Campus has received a strengthening grant from BIFAD to enhance its capabilities to participate in international programs. In addition, the Campus has a program in Egypt working with the rice production and cooperative agreements with universities in Mexico and China.

The contributions of the university in these projects involve technology transfer, institution building, and the strengthening of human resources. I will give examples of each category, based upon our program in Egypt, starting with technology transfer. The University of California at Davis has a long history in the development of new tomato varieties used for tomato products and for the fresh market. Improvements have been made in the ability to harvest the tomatoes by machine, in nutritional quality, soluable solids, flavor and color as well as disease resistance and adaptability to grow under environmental stresses, such as high salt conditions. In the past thirty years, yields have gone from ten to fifteen tons per acre to an average yield of twenty-seven tons per acre. When the UC-Egypt project was initiated, the average yield of tomatoes in Egypt was seven tons per feddan, which is roughly equivalent to an acre. A collaborative tomato breeding program was established using germ plasm from the University of California. Five superior high yielding, disease resistant cultivars were introduced by the project and were grown on some forty thousand feddans in 1983. The combination of new cultivars, improved insect control and better irrigation management practices raised tomato yields from seven tons to twenty to thirty tons per feddan. It is projected that the new technology will increase the annual value of the tomato crop by 161,000,000 Egyptian pounds, a ten-fold return on the fifteen million dollar investment in the entire project for this one accomplishment alone.

There is often concern on the part of domestic agricultural interests that the international programs create additional competition and may diminish markets for US products. However, the project in Egypt contributed to the US and California agriculture as well as to Egyptian agriculture. As an example, Egypt has a tomato disease, tomato yellow leaf curl virus, which is not yet present in California. However, it is believed to be present in Mexico and therefore the potential of its spreading to California is great. The UC-Egypt project provided the opportunity to screen California tomato cultivars for resistance to this disease. The Egypt project has enabled us to get a head start on developing resistance for the disease before it becomes a problem in California. Screening was also conducted for tolerance to fruit set under high temperature conditions and for salt tolerance, both of which are problems to California agriculture. Therefore, there is an exchange of benefits by participation in international agricultural programs.

The second responsibility in international programs, in addition to the transfer of technology, is institution building. Continuing to use the tomato activities as an example, one of the reasons for the success of the program was that the project was a systems approach which linked not only the research activities of the universities and the ministry of agriculture (which in the past had operated essentially in isolation from one another), it also linked both of these entities to the Extension Service. In this way, the new varieties and new cultural techniques that had been developed by research were transferred for use in the farmers' field. Extension not only provides the transfer of information from the researcher to the user but also serves as a feedback mechanism that identifies problems which researchers should be aware of. The success of the extension/research linkage in the tomato project and other projects within the UC-Egypt programs has created a much greater awareness in the the ministry of agriculture about the essential nature of this linkage. We believe this will be a contribution that will survive the termination of the projects.

The third area of responsibility is developing human resources or human capital and this was accomplished by providing either postdoctoral or doctoral training of Egyptian scientists at Davis in horticulture, agricultural economics, food science and technology and other fields. The training of individuals in the United States and their use of that knowledge to solve problems in their home country represents a valuable, long-term investment in developing nations which strengthens their ability to help themselves. Often it also represents a bond of friendship with the United States that lasts for a lifetime.

In addition to participation in projects such as I have described, individual members of our faculty participate in research programs associated with the International Agricultural Research Centers. The first International Center, the International Rice Research Institute (IRRI), was established by the Rockefeller and Ford Foundations in the Phillipines. The success of IRRI stimulated the development of twelve additional centers and funding is now provided by the Agency for International Development which is responsible for 25% of the total costs, by the World Bank which provides approximately 12% of the funds and by other nations which contribute the balance of the funds used by the International Centers. Each center has a major commodity or theme for which it is responsible. The centers provide information and cultivars not only for the country in which they are located but for the world. The short stature rice, a product of IRRI research, is an example. Although there are substantial variations in quality and success among the International Agricultural Research Centers, they are viewed as major contributors to international agricultural development.

Although it is possible to identify highly successful programs, there is still much room for improvement. One is to facilitate communication among the important components of international agricultural development -- the universities, the International Research Centers, and the AID missions. We have proposed, for example, exchange programs for scientists between universities and the International Centers. Also, it has been suggested that AID personnel responsible for monitoring the International Agricultural Research Centers be encouraged to increase the frequency of consultations with the agricultural officers of the regional bureaus to provide them with an understanding of the capabilities of the Centers and to obtain their inputs in the evaluation process of the Centers.

Finally, funding for agricultural and nutritional programs within the Agency for International Development's budget should receive, in my opinion, a higher priority. Since 1982, overall funding for development and assistance programs within AID have increased by 22%, funding for agriculture, rural development, and nutrition programs increased 6% and funding for the Office of Agriculture increased by only 3.7%. The Office of Agriculture is responsible for the US contribution to the International Research Centers ($50 million of the $82.1 million Office of Agriculture budget in FY84), the Title XII program including the seven Collaborative Research Support Programs (CRSP), and research contracts and grants initiated by AID missions. Clearly, the funding for the Office of Agriculture has not kept up with increased costs of research and the results have been the curtailment of existing programs and diminished flexibility to fund new initiatives. One important approach to alleviating world hunger is to increase the capacity of all nations to produce food and fiber in an ecologically sound manner using to the fullest extent possible existing resources including human resources. The programs initiated under Title XII and the International Research Centers provide mechanisms for technology transfer, institution building, and human resource development which can provide sustained returns from the investment the United States makes in international development. It is an investment that deserves a higher priority within the Agency for International Development and the full support of Congress.

UNIVERSITY OF CALIFORNIA, DAVIS

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COLLEGE OF AGRICULTURAL AND
ENVIRONMENTAL SCIENCES
AGRICULTURAL EXPERIMENT STATION
OFFICE OF THE DEAN AND ASSOCIATE DIRECTOR

DAVIS, CALIFORNIA 95616

July 26, 1984

Congressman Vic Fazio
House Office Building
Washington, D.C. 20515

Dear Vic:

One of the questions you asked during the afternoon hearing at Davis was: Is there a need for a new agency for international development which would be addressed to alleviate world hunger? The question stimulated some discussion among several of us and I would like to share with you my own conclusions.

If it would be possible to separate international agricultural development (including food production, nutrition and rural development) from the state department, then I would recommend placing the responsibility for international agriculture development in the Department of Agriculture. The Department already has an Office of International Development (OICD) and conducts international programs. The main advantage is that the Department has a long-established link to all the Land Grant College through the Cooperative State Research Service (CSRS) which administers the Hatch program. I could develop this agrument further but I realize that it is probably not realistic to consider an international development program run independently of the State Department.

Why then have the programs in AID under Title XII and the Board for International Food and Agricultural Development (BIFAD) not been more successful? First of all, the Agency for International Development (AID) fought the program from the start. The Office of Agriculture budget is finite ($82 million as I stated) and the largest and uncontrolled part is allocated to the funding of the international research centers ($58 million). It is uncontrolled because while the US agrees to fund 25% of the total, the total itself is dependent upon what other countries give. The total funding of the international research centers

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has grown from $19 million in 1974 to $85.4 in 1984. The Title XII program and the Collaborative Research Support Programs (CRSP) added to the competition. The research contract and grants initiated by the AID missions now competed against both the international research centers and the Title XII program. The AID people was Title XII as a ripoff for US universities and in competition with their own priorities -- rather than as a tremendous resource to help IAD programs. It is true that the US universities have to make some adjustments as you have heard, but it is not as bad as some critics would want to project. After some years, this attitude is improving but, as budgets diminish or not keep up with inflation, the tension remains.

The other problem was personnel. AID had gone through a period when personnel with agriculture and university background diminished through retirement or death and were not replaced. The new personnel did not understand US universities or agriculture and were defensive if not hostile. In the last few years, some excellent people have been brought in -- Nyle Brady, Fred Hutchinson, John Stovall, Anson Bertrand and the relations with the universities has improved greatly. They are still hampered by inadequate staff support. Also AID still maintains an arm-length attitude to BIFAD and casts them in a purely advisory role. As a member of JCARD, a subcommittee of BIFAD, I sometimes wonder if the investment in time given to the committee is worthwhile since you are not sure your recommendations will even get a hearing in AID. My suggestion is to give BIFAD some more muscle in the running of the international agricultural development programs and provide some additional high quality staff to do the work. I do not recommend creating another agency.

I would be glad to discuss the issues further if you wish, either in Washington or here in California.

With best regards, I am

Sincerely yours,

Charley

Charles E. Hess
Dean

CEH/lh

cc: Mickey Leland

PREPARED STATEMENT OF ALEX F. McCALLA, PROFESSOR, AGRICULTURAL ECONOMICS, UNIVERSITY OF CALIFORNIA AT DAVIS

Whether a developing country can meet its food needs now and in the future depends on a complex set of interactions between farmers, consumers, national policy makers and international actors. Not all of the variables are amenable to change by direct policy action. For example, supplying new technology and providing incentive prices only increases food supplies _if_ individual farmers are responsive to economic incentives and have sufficient education to assimilate the new technology. Fortunately, most evidence suggests that small peasant farmers are rational and do respond to economic incentives. Nevertheless, the point remains, policy makers must depend on the behavior of people beyond their direct control. They simply cannot mandate change even in centrally planned economies as the experience in Poland and the USSR confirms.

Given that national governments cannot directly influence all elements that contribute to meeting food needs, the entry points for influence on food outcomes available to developed countries such as the United States are even more constrained. This is so both because foreign assistance cannot influence directly some variables e.g., land availability, population growth, rural-urban distribution, etc., and because any kind of foreign assistance requires the cooperation of host governments to pursue consistent policy in other areas. Thus, my contribution today will be to try to briefly identify the major determinants of food supply and food needs and to discuss the macro and international context within which national governments operate. I close by discussing explicitly where foreign assistance might fit in. The basic message is that single approaches e.g., generation of higher yielding wheat varieties, are unlikely to be successful unless the aid agency understands the broader context of national policy making. I will use examples from my Egyptian experience to illustrate my case.

Determinants of a Nation's Food Supply:

- natural resource base--soils, water--and potential for expansion;
- production technology which determines current and potential yields;
- availability and prices of inputs--e.g., seeds, fertilizer;
- policy with respect to farmer prices, marketing and inputs;
- national policy priority assigned to agriculture sector--
    a. availability of fiscal resources for price supports and investment, OR
    b. use of agriculture as a source of revenue--explicit and implicit taxes
- role of agriculture in international economic relations--
    a. as a source of foreign exchange earnings, OR
    b. as a foreign exchange cost for imports (quantities that can be purchased are a function of foreign supplies and international prices).

All of these variables interact in a complex interdependent way to determine the level and stability (security) of a nation's food supply. Changing one variable does not necessarily improve food supplies because there are significant complementarities among the variables. For example, increasing production potential by new high yielding, fertilizer responsive varieties does no good if price incentives are not there and inputs are not available at profitable prices. All of these domestic variables are subject to uncontrollable shocks e.g., weather, international prices and interests rates and political variables.

Determinants of a Nations Food Needs (Demands):

- current population plus the rate of growth in population;
- age distribution of population;
- geographic distribution - rural versus urban;
- levels of per capita income and rates of growth in income;
- distribution of income - overall and rural versus urban;
- nutritional status of population stratified by age, sex, and rural versus urban (closely related to income distribution).

How Policy Helps or Hinders in Providing Supplies to Meet Needs

National governments have multiple objectives and may or may not have a clear-cut food and agriculture strategy. The case of Egypt illustrates nicely the role of policy in determining current and potential future capacity to meet food needs. Egypt has limited land area (less than 6 percent of their land is arable namely the Nile River Valley and Delta). Levels of productivity are well above most developing countries but more potential exists. Yet, national policy has historically been oriented towards an industrialization-urbanization policy with the role of agriculture being one of earning foreign exchange (cotton) and providing tax revenues by paying farmers prices below prices charged to consumers. Simultaneously, Egypt has pursued food subsidy programs, particularly on bread, which have fixed nominal prices very low and guaranteed unlimited supplies. Not surprisingly, rapid population growth, rising incomes and rapid rural to urban migration greatly increased food needs particularily in the cities. This coupled with price disincentives to farmers and relatively low investments in research and agricultural improvement has increased markedly Egypt's dependence on imports of food, particularily wheat. Given limited export earnings, as cotton exports have declined (despite forceful mandates for production) and rising import needs, Egypt has become increasingly dependent on Food Aid (PL480), thus making her vulnerable to international politics. While food aid may benefit urban dwellers, it allows Egypt to defer developing domestic food production by paying already poor farmers low prices. Domestic political strength appears to reside in urban areas, this coupled with the government being the employer of two-thirds or more of the labor force, has made current low levels of food prices a very politically sensitive issue. Thus, food subsidy costs now put a drain on domestic fiscal resources that the cost is reported to exceed defense costs. This Egyptian dilemma illustrates a pervasive problem of trade-offs between low consumer prices and profitable prices for local farmers. Farmers cannot be expected to adopt new technology unless policy provides the proper incentives. Food aid and/or other kinds of development assistance can help or worsen this problem depending on how national policy makers utilize the assistance.

The question then becomes how does Egypt break out of the vicious circle of low food prices, rising budgetary costs, low prices to farmers and rising food deficits? For the foreign assistance provider the additional question is - given that a set of policy reforms is initiated--how can, say the United States, help Egypt to develop a secure and growing food supply?

Foreign Assistance Entry Points

The foreign assistance conundrum should now be clear. How can the United States help Egypt (or any country) improve its food situation? The options are limited:

- provide capital assistance e.g., fund new land reclamation or drainage or market infrastructure projects;
- provide technical assistance to improve and/or adapt higher yielding technologies;
- provide technical and capital assistance in improving inputs supplies;
- provide assistance in policy analysis to assist Egypt discover alternative avenues;
- provide assistance in human resource development e.g., supporting training programs;
- provide assistance to population control programs (although recent Administration pronouncements seem to limit this option);
- provide monetary assistance to other sectors to free domestic resources for investment in agriculture (on the basis of past experience this is unlikely to happen);
- provide subsidies to commercial imports;
- provide food aid;
- preach to the country to change their policies.

Any one of these options or even combinations would have to be done in the context of consistent domestic policies because in the absence of joint positive action bilateral foreign assistance is doomed to failure.

My purpose is not to be pessimistic about potential roles. Rather, my intent is to present the reality of the constraints to foreign assistance.

Barring trying to force domestic policy change by tying aid to policy reform (the World Bank-IMF approach), the effectiveness of foreign assistance is very dependent on co-joint domestic policy initiatives. Recognition of this should condition both the nature of assistance and the expectations we have when programs (projects) are undertaken. A final example should make the point. To provide assistance to improve the technology of broiler production, when incentives, inputs, infrastructure and income are not available to create and use the output does no one any service.

jd 7/17/84 JD20

PREPARED STATEMENT OF A. E. HALL, PROFESSOR AND SCIENTIST, AGRICULTURAL EXPERIMENT STATION, UNIVERSITY OF CALIFORNIA AT RIVERSIDE

The issue that I am addressing is the mechanisms whereby Universities in the U.S. can more effectively contribute to improving the nutrition and standards of living of people in developing countries. Improved agricultural systems for the poorer farmers would provide an important means for achieving this goal.

The opinions that I will express are personal and should not be considered as representing an official position of the University of California. I have some direct experience in that I have worked in Africa for long and short durations since 1961, as a farm advisor and research scientist, and in the design and evaluation of agricultural development projects. In addition, while working as a Professor for the last 13 years I have gained some understanding of mechanisms whereby the University of California can contribute to the development of improved agricultural systems for both California and developing countries. I will discuss the relative merits of three mechanisms.

1. The U.S. Government spends substantial funds on contracts under which U.S. personnel conduct research and extension activities in developing countries. However, in many cases, Professors of the University of California cannot fully execute their direct responsibilities to the University or easily meet requirements for professional advancement if they are stationed overseas for extended periods. Frequently, the types of research and training required by these contracts are more applied than those required of a Professor at the University of California. Consequently, University involvement in contracts is only appropriate in circumstances where the specific expertise of the Professor is needed and is available. Unfortunately, too many universities in the U.S. accept contracts , and then act as "body shops" hiring temporary personnel to do the work overseas, and the research may be totally different from that being conducted by the University in the U.S. and they have inadequate experience and expertise.

2. Under Title XII, grants have been provided for collaboration in research and training between U.S. Universities and Institutions in developing countries. Ideal opportunities for productive collaboration exist where cooperative research can be conducted, both in the developing country and the U.S. by a team of University and developing country scientists, which benifits both the developing country and the U.S.. The Collaborative

Research Support Programs established under Title Xll can also provide an effective mechanism for training personnel from developing countries. The highest priority should be given to helping people in developing countries to solve their own problems. I have been the Principal Investigator of a project of this type for four years and I have found that in addition to being of benifit to Senegal this project has substantially helped my program to develop improved crop varieties and management methods for California.

3. More funds are needed for collaboration in research between U.S. Universities and the International Agricultural Research Centers. These Centers can substantially contribute to agricultural development in developing countries and the U.S., and they already receive funding from the U.S. Government. Their progress could be accelerated by closer collaboration with U.S. Universities which are doing the supportive fundamental research which is necessary for long term progress in agricultural development. Closer collaboration would make sure that the scientific advances being made at the International Centers are available to U.S. Universities and U.S. agriculture.

Irrespective of the mechanism used to enlist the expertise of U.S. Universities in solving the problems confronting agriculture in developing countries, in most cases, field-oriented research is most useful. The value of modern molecular approaches to plant breeding has been substantially exaggerated, and is far too speculative to warrant inclusion in collaborative projects with developing countries. Molecular genetic engineering has been funded at extremely high levels in recent years, yet to my knowledge it has provided little of direct value to crop improvement, and at the most it can only supplement field-oriented plant breeding programs. More funds for aggressive and innovative field research programs would enable U.S. Universities to better serve agriculture in developing countries and also in the United States.

PREPARED STATEMENT OF CHARLES E. FRENCH, DIRECTOR, INSTITUTE OF AGRIBUSINESS, UNIVERSITY OF SANTA CLARA

My testimony will focus on private sector issues in world hunger. Within that context some comments will deal with educational programs that are designed for those pursuing careers in international agribusiness.

My vantage point on this topic comes from a thirty-year career in education, government service, and private industry consultation with substantial specialization on agricultural and food matters. My international travel has been extensive. My present responsibilities deal mainly with educating young U.S. and foreign nationals better to manage in today's agribusiness. Some of my comments flow out of seven years (1975-82) of public service which included National Academy of Science staff work on the World Food and Nutrition Study for The White House.(1)

Numbers in parenthesis refer to the order of listing of this reference at end of paper.

membership on several U.S. food and agricultural delegations abroad, specific personal responsibilities for helping individual countries build better food sector strategies. and designing and participating in overseas Presidential missions on food matters following President Reagan's Cancun, Mexico commitment to such commissions. Both the food sector strategy work and the post-Cancun commission work had heavy emphasis on private sector involvment.

Some Comments on General World Hunger Issues

World hunger is a serious problem of great concern. It was considered an intractable problem from ancient times until recently. My position is basically optomistic (2). I concur with a growing number of people who now consider the problem solvable.

Such a position of optimism may be a departure from what many have discussed with you. Let me be clear. Many have been convincing in their pessimism about world hunger, and history is on their side. Solving the problem is difficult and long-term at best.

I would be among the last to play down the pervasiveness or the intransigence of the world hunger problem. For me to raise false hopes would be irresponsible. But there are good reasons today to hope for a solution to world hunger and one that will occur in our time. No past generation has had the luxury of such a hope; we should not deny it.

My somewhat optimistic thesis is based on some current events, probably fortuitous, but collectively encouraging.

First, a strong consensus has evolved that we now have the scientific and technical know-how to feed the world, including its expected growth. The World Food Conference held in Rome in 1974 advanced this hypothesis and the National Academy of Sciences World Food and Nutrition Study of 1977 verified it. The scientists are convincing in their rationale on this point. Moreover, a world network of food science is fast developing. Good food scientists in most countries of the world in a dozen or more international centers for research are providing the cooperative thrust with an array of scientific answers vital for attacking the world hunger problem. The existing science centers of the developed world also are being integrated into this system. Food and agricultural research results are exciting and hold their own with the marvels of modern science on any subject.

Second, world hunger is appearing on the key agendas of nations throughout the world. Usually such problems receive little attention until that happens, so getting on the agenda is an important accomplishment.

Third, things often have to get worse before they can get better. The global fear of extinction, or at least the fear of the North about being forced to share its wealth with the South may have brought us through a catharsis, resulting in a search for mutuality. We must not overplay this aspect of the importance of world hunger, but pragmatic solutions for world survival are not easy to find. Hungry people are restless and restless people can be dangerous. So it is not a flight in reasoning to argue that one of our strongest bids for world peace today may well be the eradication of world hunger.

Fourth, our tools for world development are improving. The problem is better defined, even though it is becoming more complicated. An important component of that definition relative to world hunger is the preeminence given agricultural growth in

ends in general

are having their influence. New emphasis in food matters is on self-reliance by individual countries rather than on blind self-sufficiency. This has meant more trade in food. Greater need for responsible world trade patterns in food is evolving. Trade increases will bring more private industry involvment.

Some success stories about developing countries having improved their food system are emerging. Thailand, India, Taiwan, brazil, and others haveorld.

For the first time, most of the anguished, malnourished and striving masses are learning that scientists, businessmen and politicans know how to help them.

These people are restless and are beginning to realize that they may not be helpless. The potential for explosion is there.

But more important, this setting which was possibly generated by a catharsis may have within it the potential for pragmatic science, a profitable business network, political feasibility, world peace and a cradling needed for massive upgrading in human dignity.

World Hunger Implications for the Private Sector

Not only have food and nutrition issues emerged with greater visibility in the international arena, but private industry involvment in the world food system in recent times appears to have increased.

First, any observer of the U.S. food scene is impressed with the impact of trade on this country. And trade trends in general are having their influence. New emphasis in food matters is on self-reliance by individual countries rather than on blind self-sufficiency. This has meant more trade in food. Greater need for responsible world trade patterns in food is evolving. Trade increases will bring more private industry involvment.

Some success stories about developing countries having improved their food system are emerging. Thailand, India, Taiwan, Brazil, and others have made the news. Improvement in these countries is significant in its own right, but it also serves as an important example for other developing countries. Also, these improved economies now are providing valuable markets even for certain foodstuffs, and the United States has shared substantially in this.

Second, planning for individual food sector strategies has increased widely throughout the world (4). Much of the impetus for this came from the World Food Council; however, individual countries, multi-lateral development agencies and others have picked up the thrust of this development and have moved it forward. These strategy exercises in and of themselves tend to take a closer look at the place of the private sector. The evaluation of many of the government-owned companies show that they have not been doing the job well. The emphasis in the food sector strategy work on nutrition planning as contrasted to emphasis on production has placed greater emphasis on the marketing system, particularly the private sector.

Third, President Reagan promised at Cancun that he would send agricultural missions to other countries at the request of Chief Executives of those countries. Quite a flurry of these missions has evolved. And the one thing that has dominated most of them has been the heavy emphasis on the private sector . The selection of countries, of course, in many ways would tend to move the exercise in that direction, but most of us who worked on these have been increasingly impressed that the evolving problems of priority turned out to be those in one way or another afffecting or are being affected by the private industry.

Fourth, the private sector push has probably been facilitated by the basic motivations of many of the individual countries. Certainly, the interrelatedness of country motivations today would tend to assure the longer-run involvment of these private agencies. Agricultural development, particularly the private sector portion is a power behind this whole mutuality. A convincing case can be made for the fact that the selfish needs of individual countries around the globe may give us constructive group actions. The thread of mutuality that often brings this result hinges on some of the private sector institutions.

Highly oversimplified, this line of argument develops as follows: Industrialized countries need the markets of the developing countries, the newly rich countries, and the socially planned countries. They need political alliances and mutual security pacts with all countries. Also, they need worldwide technical and social development -- for example: China's salvage agriculture, especially in animal production; Southeast Asia's new multiple cropping systems; Europe's land-intensive culture; and the international research centers' genetic innovations in such areas as plant tolerance to salinity and trace mineral deficiencies.

The developing countries need the technical and managerial assistance of the industrialized and socially planned countries, the markets of the industrialized countries, and the capital of the newly rich.

The newly-rich countries need the capital outputs of the industrialized countries but they need those of the developing countries even more; they need the technical and development assistance of the industrialized and socially planned countries; they need the products of the developed countries; and they need political alliances and mutual security pacts with industrial and socially planned countries.

The socially planned countries need technical assistance and products, especially agricultural, from the industrialized countries; they need mutual security from the industrialized and newly rich; and they need raw materials and political alliances from the developing countries.

Fifth, management appears to be the cornerstone for most of these private sector developments. The environment for agribusiness firms is increasingly dynamic. Business consolidations, consumer diet shifts, high-technology advancements, and global food pressures are probably the leading forces for modern adjustments and business strategy. Today, agribusiness managers must anticipate change and use that change to forge business opportunities that yield high returns. The penalties and threats for managers who ignore these market developments are unprecedented. There seems to be no doubt about the importance of management. Also, its importance will increase relative to that of overall policy and traditional technological infusions.

Sixth, the United States has some special problems that are particularly related to public policy in this area. For example, the private sector input into the policymaking process has not been a natural one and is in many ways quite lacking. Real questions exist as to how to get this private sector input. Because of the drama of the global impacts on most U.S. agribusinesses today, the timing may be much improved for working with the private sector for more direct public-private sector planning, particularly with regard to issues such as education. Another problem of the U.S. in this area is the fact that most of these problems that are being discussed, even though they have a private sector component, cut across many aspects of the public policy process. The problems are primarily inter-cabinet in nature. Yet, the Executive Branch of the U. S. Government does not have a good inter-cabinet functioning system to handle such problems. Continuity and memory are lacking. Analytical expertise for these larger problems is in short supply as contrasted to that used on traditional turf problems. A poor information base exists for such problems. Analysis of this problem is currently being undertaken with particular reference to food issues by Resources For The Future. This study, if well done, could make a major improvement in food policy. Particularly it could have significant effects on how the private sector input is generated. Another U.S. problem at the public level is the lack of emphasis traditionally on social science research and general backup. The management input into that is almost nil. The managerial programs for research in the Federal Government should be upgraded. For example, many hold that a great potential exists in preventive medicine via improved nutrition, yet our bio-medical research program has a very small percentage devoted to nutritional research. Another example fi[illegible]s the whole food regulatory issue torn between public vs. private responsibility. This is becoming a bigger issue in the way the United States involves itself in international trade. The whole management of public food and agricultural policy in this country needs evaluation.

Implications With Particular Regard to Educational Programs

First, a study of some stature is needed to learn more about the people who run the modern food system. We know little about who is being recruited and who is being promoted in agribusiness management, both domestically and in other countries. We need this information if we are to design educational programs to improve agribusiness management. Such a study could be done within the Federal Government, but probably should be done within the educational community.

Second, university educational programs in agribusiness management for educating U.S. nationals at the university undergraduate and graduate level need to be strengthened (3). Student interest in international agribusiness is high, but the programs have some problems and the demand for current education for international work is questionable. The Land Grant Universities are attracting many students for undergraduate programs in agribusiness, but these programs are widely varying and often contain little business management education, and even less international agribusiness management education.

Universities other than Land Grant Universities have difficulty providing the agricultural specialty needed in these programs unless they are fortunate enough to have unusually strong top-level university support for such specialized programs. In general, undergraduate education programs in agribusiness get weak support from schools of business. This problem is the same or even worse for most graduate-level programs in agribusiness.

Various university experiments for improving agribusiness programs are under way. Well-targeted support and appropriate monitoring of these experiments by federal decisionmakers could do much to improve them.

Third, the growing need for university-level management education by foreign nationals deserves more attention. The problems referred to above all hold for foreign student training in this area. In addition, the programs are less well equipped to handle foreign students. Several universities abroad are trying to build up competence in this agricultural specialty. Over time, they can handle quite a bit of the training necessary in this area. However, they have critical staffing needs at this time. Improved selection procedures for foreign nationals and more specialized education programs in The United States need to be developed. United States resources going for foreign national education should probably be focused on graduate rather than undergraduate programs. Those assisting in the placement of foreign nationals in United States universities need to be fully informed about program quality and content. Selecting the right program for the right student is vitally important. The university most appropriate in agribusiness management education may not be the one typically used for more technical agricultural teaching.

Fourth, funds for preparation of appropriate teaching materials, such as case studies for this type of education, would be well spent. The Agency for International Development has just had prepared a series of about a dozen case studies on foreign agribusiness problems. This type of thing is commendable.

Fifth, educational programs directly joining U.S. national and foreign national students on the same projects could be most valuable. Title XII has some provision for this, but special funds to both U.S. and foreign universities to allow them to concentrate on this specifically could have high return. Overseas experience for U.S. national graduate students in the management area is extremely valuable.

Sixth, conditions have changed which now allow us to look for more short-term management education abroad. Many countries now have an infrastructure of qualified educators and business people with foreign experience, language capability, and aptitude sufficient to maximize the use of many more different kinds of university educators than in the past. The traditional criteria of long-term overseas experience, extensive language training, and specific country knowledge and contacts may be substantially too rigorous for necessary qualifications for U.S. staff recruited to teach in the short-term programs abroad. The balance between staff input from this country and that which can be recruited locally has shifted. These programs might be able to leverage substantial in-country talent with a low marginal input from U.S. universities.

Seventh, specialized management jobs, such as public agricultural agency management, or even more specific management jobs such as resource management, research laboratory management, animal health program mangement, could use short-term specialized programs. The opportunities for teaching these abroad are becoming much more realistic. Also, these programs are badly needed, and more innovative programs need to be developed.

In Summary

Private-sector involvment is mandatory if world hunger is to be eliminated. The management input is critical. Modern management recognizes formal education as a high-return input. Public programs to support quality agribusiness management education will be critical in the outlook on world hunger. Exciting, but often highly fractionated programs are underway. Many things are happening in agribusiness education. The area is no longer a stepchild and must not be treated as such. It needs some direct attention by public decisionmakers. Well-placed special resources should yield high return for fairly nominal investments.

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PREPARED STATEMENT OF CHARLES H. HALSTED, M.D., PROFESSOR OF INTERNAL MEDICINE, UNIVERSITY OF CALIFORNIA AT DAVIS

To place the issue of world hunger in proper perspective, it is important to recognize that malnourished populations are at sharply increased risk for a variety of infectious illnesses which, in turn are the ultimate causes of mortality. Furthermore, the presence of an acute intercurrent infectious illness greatly exacerbates malnutrition. Thus, malnutrition and infectious disease exist in a vicious cycle. Break out from this cycle requires a broad approach of basic education, provision of better diets at critical times in the lifespan (pregnancy, lactation, and early infancy), and basic health maintenance programs including sanitation and immunization.

The common link between malnutrition and life threatening infectious illness is alteration of the immune system, i.e. the body's defense against infection. Detailed and convincing studies over the past ten years have shown that in children with Kwashiorkor (protein-calorie malnutrition) key parts of the lymphatic-thymic system atrophy, with resultant decreased production of T cells, which are essential for cell-mediated immunity and, the basic defense against viral and many parasitic and bacterial infections. Although the other major component of the immune system, the ability to produce antibodies, is generally intact, there are defects in synthesis of other proteins (complement system) essential for killing of bacteria. Studies in children with protein calorie malnutrition show that these processes can be reversed with adequate nutrition.

The infant mortality rate (IMR) is defined as the number of deaths occurring per thousand of population during the first year of life. The IMR ranges from a low of seven in Sweden (12 in U.S.) to greater than 200 in Central Africa. Worldwide, the leading causes of death in infancy are diarrheal diseases and variety of immunisable disease. 500 million children have 3 to 4 bouts of diarrhea every year, and in many parts of the world at least half of all days of the year are spent with diarrhea. Worldwide mortality from diarrhea is about 10 %, half of this group before age five, and 1% or 5 million per year before age one. Diarrhea is due to a variety of different bacterial and parasitic organisms, and has the common outcome of severe debilitating dehydration, falling blood pressure, accumulation of acid in the blood with resultant stoppage of heart. The other main groups of diseases affecting infants in the first year of life include measles, pertussis, tetnus, polio and diptheria, all of which can be prevented by proper immunization. The total infant mortality rate world wide of 12 million per year is roughly divided between diarrheal diseases and the latter category of diseases.

Malnutrition and acute infection work together in a sinister alliance. Together with poor sanitary conditions, malnutrition alters the immune mechanism with increased risk of infectious disease. In turn, infectious disease accelerates malnutrition through several mechanisms. Acute illness is usually associated with poor appetite and frequently vomiting, with resultant decreased food intake. Intestinal infections alter the intestinal absorption of essential nutrients. Furthermore, acute infection increases the requirements for essential calories and protein. For instance, a typical non-lethal attack of measles usually causes a 10% loss of body weight and will slow the growth rate by one-half. Even in the population which survives acute infection, the effects of recurrent infections are devastating. In addition to decrease in physical growth, there is also slowing of mental development due to the apathy of acute illness, and to decreased development of brain tissue. Ultimately, this means that the social and economic growth of the population will be limited.

How can this cycle be prevented? Immunization is important, but hardly the complete answer. Estimated costs of immunization of the common viral infections is $5/child, or about $500 million dollars per year (the cost of 10 fighter planes). However, history shows us that improved living standards are most critical. One hundred years ago in New York City the IMR was greater than 100, and fell to less than 50 prior to development of any vaccines. Improved IMR occurred at the same time as rising living standards, including improved sanitation and housing.

While standards of living require decades and centuries of progress, concerted efforts can nevertheless be made at key points in the life cycle to break the cycle of malnutrition and infection. The major target should be the young woman who will bear and ultimately suckle the infant at risk and who will be responsible for treating illness at home or bringing the child to medical attention. Literacy is essential, and studies in at least 15 different nations have shown a fall in infant mortality by more than 50% in women who have had more than four years of schooling. Family planning is essential; studies in El Salvador and Chile have shown that the fifth child is about three times more likely to die of malnutrition and infection than the first child. Other studies in India and Turkey have shown that the infant mortality rate is greater than 200 when there is less than one year spacing between children, falling to less than 80 when children are spaced out beyond three years. In addition to being more likely to understand family planning, the literate mother will be more aware of her child's need for greater nutrition, since infants and children require three times more calories and twice as much protein per body weight than adults. Reading and understanding simple growth charts are excellent means for the literate mother to develop an appreciation between adequate nutrition, illness, and child development.

Many population studies have shown that the underweight child, less than 2.5 kilograms at birth, is three times more likely to die in the first year than the child who weighs more than 3 kilograms at birth. Studies in Guatemala and India have shown that the simple provision to pregnant women in the last trimester of 300-500 calories and 10 grams of protein with adequate iron and folate will make normal birth weight much more likely and ultimately reduce infant mortality by more than 50%. After birth, continued adequate nutrition of the mother and an emphasis on breast feeding for at least six months will further limit infant mortality. Studies in India, Canada, and Chile have shown that bottle fed-babies are three times more likely to develop diarrhea or respiratory disease than breast-fed infants, and in the Phillipines a concerted program of breast feeding reduced diarrhea and infant mortality rates by more than 95%. Human breast milk is an ideal source of nutrition during the first six months, since it provides essential antibodies, is non-allergenic, and is easily available, in contrast to bottle formulas which may be mixed with dirty water, may not always be available, and may not be properly mixed. Finally, a revolution in treatment of infant diarrhea may be occuring, based on detailed studies of nations with cholera. Now it is known thal oral rehydration therapy (ORT), with simple, easily mixed solutions of glucose and salt can promote proper fluid balance and prevent deaths from diarrhea. Studies in Bangledesh have shown 95% success rate by such treatment. This approach underscores the interrelation of literacy, and basic education.

In summary the greatest effect of world hunger is on infants and small children who become susceptible to life threatening infectious illness. Malnutrition has profound effects on the immune system, and, together with poor sanitation and crowded populations leads to increased risk and mortality from common infectious diseases. Although immunization practices are an important adjunct, studies from many parts of the world indicate that infant mortality can be significantly lowered by provision of proper nutrition to pregnant women, emphasis on breast-feeding and family planning, and provision of adequate fluid replacement therapy in diarrhea, the major cause of infant mortality world wide. Thus, world hunger, ignorance, and infection take the major toll of deaths in early childhood. Improved living standards, education, and provision of nutrition at key points in the life cycle (pregnancy and lactation) appear to be the major factors in improved health of the world population.

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SPECIAL REPORT

FOOD, NUTRITION, AND NUCLEAR WAR

Some will consider the analysis of the specific effects of thermonuclear war on food and nutrition to be a meaningless exercise for a society whose populations would be decimated, and its social fabric destroyed, by such a war. However, consideration of these topics can add another dimension to the professional and public understanding of the horror of the threat. Most aware persons are aghast at the public utterances of those who emphasize the possible number of survivors after nuclear war in ways that seem to imply that there would be enough people left to pick up the pieces and go on to rebuild, that such a war is thinkable because the country and its population would not be totally devastated. Many who emphasize the number of survivors appear not to have considered how survivors would obtain food. However, there is considerable past experience on which to base estimates of some of the consequences of nuclear war with respect to food and nutrition.

DISRUPTION OF DOMESTIC FOOD SUPPLIES

Others have pointed out the difficulties of mass evacuations of the U.S. urban populations by private car and have warned about the massive traffic snarls and impossible housing problems that would result, even if the proposed seven to nine days' warning were realistic. Assuming that partial evacuation could be achieved before nuclear bombs fell, where would the food come from afterward? In Massachusetts, for example, at least three fourths of the food arrives from out of state by truck or rail, and supplies on hand would last only a few days. In an attack most of these supplies would be destroyed.

In the United States, food is no longer carried by farmers to nearby markets, as it once was. It is supplied by agribusiness, a complex network that involves inputs of farm machinery, petroleum products, fertilizer, pesticides, and commercial seeds and requires an infrastructure to handle the food produced, including grain elevators, slaughter houses, cold-storage plants, flour mills, and a variety of other food-processing and packaging industries, plus the whole network for transportation and storage and the wholesale and retail distribution of foods. Although an area such as the northeastern United States is particularly vulnerable to any breakdown in food processing, transportation, and marketing, since about 80 per cent of its food is imported, other sections of the country would not be much better off.

Throughout the country, of course, there would be massive destruction of stored food, and depending on the season, most crops and livestock would be lost or unusable. If key railroad links were destroyed, as would most certainly occur, and if the interstate highway system were disrupted, and gasoline and diesel fuel unavailable, how would food be distributed nationally? Eighty-five per cent of U.S. corn is produced in 11 midwestern states. One sixth of the wheat is produced in Kansas alone, and most of the rest is grown from Texas north to Minnesota, North Dakota, and Montana, with some in the Pacific Northwest, Michigan, and New York but only a negligible amount in the Northeast. Two thirds of the soy beans are grown in the Great Lakes states and the Corn Belt, and rice is grown mainly in Arkansas, Louisiana, Texas, Mississippi, and California. Fruit and vegetable production is almost as narrowly concentrated.

Of the food that did become available, how far would it go and how would it be paid for? So much of the physical and social infrastructure would be destroyed that the economy would cease to function. Survival instincts would take over, and food would be hoarded or bartered, not given away. As emphasized below, most historical famines were caused not by absolute shortages of food but rather by the lack of means to pay for it and inadequate or nonexistent relief distribution.

Persons surviving the initial assault would soon not be able to find food either in stores or in a civil-defense repository and would begin to forage for it. But where would they find it? Local farm supplies outside the damaged area would soon be exhausted even in harvest season. Government officials in underground shelters or flying command posts would not be able to accomplish the herculean task of sustaining food supplies. They would not be able to arrest the frantic and crazed behavior of starving and desperate survivors first breaking into stores and warehouses and then invading and ransacking individual homes. Many would be killed by persons trying to protect their own homes, families, and food supplies.

Survivors would begin to die from malnutrition and infection within a few weeks. Even mild malnutrition and nonlethal radiation result in decreased cell-mediated and other nonspecific immunity. With resistance to infection weakened, the lack of elementary sanitary facilities, and the breakdown of programs of preventive medicine and public health, the synergistic interaction of malnutrition and infectious disease would begin to decimate the survivors further, even before radiation sickness and the late effects of trauma added their toll.

Typhoid fever is still present in the United States and Europe, and along with other diarrheas and dysenteries, it could be expected to reach epidemic proportions under the conditions that could be anticipated after a nuclear exchange. Reduced resistance and increased exposure would also exacerbate the frequency and severity of respiratory infections. With all semblance of organized medical and public-health services destroyed in much of the country, the ravages of radiation poisoning would be compounded by unchecked infectious disease.[1]

FAMINE IN THE DEVELOPING WORLD

The disastrous effects of a thermonuclear exchange would not be limited to the food supply of the areas and countries directly experiencing nuclear attack; the effects on the food supply would be global.[2] For many countries, the problem of obtaining needed food imports even now results in chronically recurring food crises. If a nuclear war occurred, how many more ships would leave North American ports with food for Third World countries?

As population growth rates in the less developed world accelerated in the 1950s, the flow of grain imports gradually increased and by 1978-1979 had grown to 104 million metric tons. Current U.S. food exports require two fifths of the acreage cultivated; grain exports from North America (Canada and the United States) now amount to over 163 million metric tons,[3] of which about 7[illegible] million go to the developing countries of Asia, Africa, and Latin America. In addition to Western Europe, the only other major exporters, Australia and Argentina, supply only about 14 and 19 million metric tons, respectively, of wheat and corn.

The number of malnourished persons in developing countries is staggering, approaching a quarter of all humankind. On the basis of the 1980 data, the World Bank has estimated that 808 million persons in developing countries — from 61 to 73 per cent of their populations — have deficient diets.[4] Even with the more stringent dietary criteria of the Food and Agriculture Organization of the United Nations, 16 to 23 per cent of the global population, or 436 million persons, have a level of food intake that permits little more than mere survival.[5] To this number must be added at least 450 million children identified by the World Health Organization as suffering from varying degrees of protein-calorie malnutrition.[6] A large number of these persons are dependent on the food supply and price structure made possible by the food exports of North America. A disruption of these sources would have grave consequences for most of the populations of developing countries.

Because the food-import needs of the less-developed countries are continuing to increase, the consequences of a cutoff of food exports from North America are growing steadily worse. According to the International Food Policy Research Institute, gross deficits of the major staples in food-deficient countries will total at least 121 to 143 million metric tons by 1990 despite all their efforts to increase agricultural production and control population growth.

Food security depends on a steady, year-round flow of food among countries. World food reserves at any given time are frighteningly limited. For a period in 1974 the world held only a 33-day supply of grain in storage. This supply increased later in the decade, but since 1980 it has dropped sharply again; at the beginning of 1982 there was a 20-day supply. Although it has since increased, any disruption of food production and distribution systems in the world would have global consequences. Of course, it is not just the poor nations that would suffer food shortages in the aftermath of a nuclear war between the superpowers; many of the countries now considered well off might suffer even more because of their greater dependence on food imports. If Europe were also destroyed, which seems likely in any scenario that we can envisage, the problems I have described would be compounded, because Europe is a large exporter of food; European grain exports alone amount to 20 million metric tons and are mainly shipped to the developing world.[3]

FALLOUT CONTAMINATION

Fallout contamination of food with long-lived nuclear-fission products would be a serious and long-term problem not only for survivors in the countries in which nuclear bombs fell but for the whole world. About 170 different fragments result from fission, about 4 to 5 per cent of them strontium-90, which has a half-life of 28 years, along with cesium-137, with a half-life of 33 years, zinc-65 with a half-life of 245 days, and a large number of fragments that have a shorter half-life, such as iodine-131 with a half-life of 8 days, or are present in smaller amounts.

The world became alarmed in the 1950s when levels of strontium-90 in the food supply, especially in milk, including breast milk, rose worldwide as a result of the American and Russian hydrogen-bomb tests in the atmosphere.[7] Appreciation of the danger led to the moratorium on atmospheric testing, broken only by the French in the South Pacific and by limited tests conducted by India and China. With large hydrogen-bomb explosions, half the fission products are pushed into the stratosphere where they gradually leak into the troposphere and are deposited slowly around the world. Strontium-90 moves from soil to plants to the rumen of the cow and, hence, into milk.[8] The levels of strontium-90 in milk increased during the 1950s until 1959 and have since declined except for a sharp but transient increase[9] after the French atmospheric nuclear detonations[10] in February and April of 1960.

The radioisotopes of strontium are biologically similar to calcium. They are metabolized like calcium and affected by the same variables.[11] Calcium, and therefore strontium-90 ions, enter bone within minutes after ingestion and almost immediately after gaining entrance into the body. Subsequent urinary excretion is so small as to be negligible under normal circumstances. The strontium content of both milk and bone is controlled by the factors that mediate calcium metabolism, and it is conventional to express strontium in relation to calcium.

The reason for concern, of course, is that any increase in radioactivity in bone increases the occurrence of sarcoma of the bone and leukemias originating in the hematopoietic tissue of the bone marrow.[12] Nevertheless, as compared with other consequences of nuclear war, this hideous prospect may be one of the least devastating. It is not the purpose of this paper to discuss further the effects of radioactivity on human beings. Others have done this in stark and horrifying terms on the basis of actual experiences in Hiroshima and Nagasaki.[13] It is relevant, however, to point out that radioactive atoms ingested with food are a major source of continued exposure to radioactivity long after the acute radiation and thermal effects of the blasts have dissipated.

Experience with effects on food supply, however, is limited and very much the concern of this paper. We know that crops would immediately be contaminated by radioisotopes through fallout, including many isotopes with half-lives of up to a year. Once again, strontium-90 with its half-life of 28 years, along with cesium-137, would be the serious long-term hazard. Plants would absorb strontium-90 from the soil relatively slowly, but since it would neither be leached from the soil nor fixed in forms that would make it inaccessible to plants, plants would be a dietary source of strontium-90 for many years.

Initially, direct radioisotope contamination of leaves would be the problem, whether consumed directly or fed to animals. The hazards to children would be particularly great, both because they derive a greater fraction of their dietary calcium from milk and because they are affected more by radiation hazards. Animal milk and breast milk would soon become dangerously contaminated with strontium-90.

Not only would plants, terrestrial animals, and products from them be contaminated with strontium-90 but also aquatic life — fish, shellfish, lobsters, and crabs[14] — and drinking water.[15] The ecological effects on higher plants and animals would be far more serious.[16,17] Exposures to gamma radiation in excess of 2000 R in four days or less would devastate coniferous forests, and similar exposures of 10,000 R would decimate deciduous forests and most vegetation.[18] If radiation damage followed by fire and erosion affected large areas, which seems probable, reestablishment of many species would be slow, and persistent simplification of the flora would occur. The resultant establishment of stable but pauperized plant systems would disrupt the complex food web of natural ecosystems, since animal communities would be affected in the same way.

The accelerated losses of nutrient minerals from the land to the water would cause eutrophication and pollution of lakes, rivers, and estuaries. The land would be degraded and less fertile because of these losses. All these influences would extend to the production of food and fiber from both natural and man-made ecosystems. This would be compounded by the proliferation of insect pests, since they are far less affected by radiation than are higher animals and plants. It might not be quite the "Republic of Insects and Grass" foreseen by Jonathan Schell in his book *The Fate of the Earth*,[19] because the rat is one of the hardiest of mammals, and it too would probably flourish.

Climate Change

The above consequences of a nuclear exchange would in themselves be sufficient to threaten human extinction. At the least, such an exchange would destroy the society that we know in the Northern Hemisphere. Even more disastrous dimensions have recently become apparent. Crutzen and Birks[20] report that the 1975 U.S. National Academy of Sciences study[21] overlooked the effects of the thousands of fires that would be ignited in cities, forests, agricultural fields, and oil and gas fields. They predict that the sun would be blotted out for many months and that temperatures would fall sufficiently to destroy food plants and the animals dependent on them.

Turco et al.[22] state that a full-scale exchange would reduce average light levels to a small percentage of normal light, resulting in a harsh nuclear winter at any season. Four effects would be combined: obscuring smoke in the troposphere, obscuring dust in the stratosphere, the fallout of radioactive debris, and the potential destruction of the ozone layer. These investigators conclude that even with a relatively "conservative" scenario for a nuclear exchange (5000 megatons, 10,400 explosions), the dust and smoke generated would encircle the Northern Hemisphere within one to two weeks. Average light would be reduced to a small fraction of normal light, and temperatures would be reduced to as low as −15 to −25°C, with subfreezing land temperatures for months even in summer.

Examining the long-term consequences of nuclear war, Ehrlich and colleagues[23] provide support for these conclusions. Food production in natural and agricultural ecosystems would be virtually eliminated for several months and seriously affected for a year. At the end of that time extensive irreversible damage to ecosystems would have occurred. Soviet analysts have agreed with these predictions.[24]

Carl Sagan discusses further the implications of this analysis, making it clear that the consequences could be much worse if the exchange continued for longer than the "conservative" estimate, or less if an exchange were limited or aborted early.[25] Even with a "conservative" exchange, however, the darkness alone could cause a collapse in both aquatic and terrestrial food chains. Moreover, biologically dangerous ultraviolet light would probably be increased by several hundred per cent because of destruction of the ozone layer, and this too would threaten plant and animal life.

The temperature drop alone in the Northern Hemisphere would eliminate wheat and corn production. It would be less cold and less dark at ground level in the Southern Hemisphere, but massive climatic and environmental disruptions could be triggered there as well. Thus, there is no prospect that the food supplies destroyed or rendered unusable could be replaced in the first year after an attack, lending further credence to the prediction of hunger and starvation.

Faces of Hunger

Historically, famines have been of two kinds: those in which there was an absolute shortage of food and those in which people simply did not have money to buy food and it was not distributed to them. Nuclear war would precipitate both kinds simultaneously. We have no precedent for the climatic effects of a nuclear exchange, but we have an abundance of grim historical evidence of what would happen to the nutrition and health of human populations. Money to buy food would not last long for people whose jobs had been eliminated by the conflict, in a country where government and infrastructure had been destroyed and money had probably lost meaning. As has happened so often in the past, most recently in Ethiopia and the Sahel but several times in this century in India, the regional movements of food necessary to alleviate local famines would not occur.[26]

Famines caused by natural disasters and wars have plagued mankind throughout history, and the consequences are only too familiar. Hungry, desperate people do not remain orderly and disciplined. In the 18th-century famines in Europe, storehouses, markets, and even granaries were plundered, and the riots often could not be controlled, even by large numbers of troops.[27,28]

The evidence of the 20th century is even more shocking because it derives from events that have occurred within recent memory and is so well documented. Herbert Hoover, in his three-volume *An American Epic*,[29] describes an absolute famine affecting 25 million people in the Volga valley and Ukraine of Russia in 1921. Death for the whole population of these areas was estimated to be only a few months away. Malnutrition and starvation were evident everywhere, and the dead were seen lying in the streets and on roads leading into towns, where they soon became prey to dogs and birds. The naked dead were piled together to be transported later to the cemetery where great pits, approximately 3 m deep, could accommodate several hundred corpses. In the city of Orenburg alone, 800 deaths a day were reported for a time.

By January 1921, the bodies of those who had died were too numerous to bury and were piled in heaps in buildings. They were often stolen, and the flesh was boiled for food. Typhus and typhoid fevers were epidemic, and dysentery was prevalent, with a case-fatality rate of up to 50 per cent in children. Bread was made from leaves, the bark of birches and elms, sawdust, nut shells, rhubarb, rushes, peanuts, straw, potato peels, cabbage, beet leaves, and even horse manure. Dead animals were luxuries. By the summer of 1921, survivors were fighting for life by eating dogs, rats, roots, skins, bones, and all manner of refuse. Men lost their reason and became cannibals. A variety of infectious diseases aggravated the dreadful suffering of the famished. A contemporary account describes them as: "Seeking food, the exhausted, sick, and naked starved people dragged themselves hither and thither seeking the larger towns and villages in the hope of finding food there. One met, at every step, living skeletons, scarcely able to move, or already completely exhausted, and dying where they lay."[29]

This occurred in the present century as the result of wartime devastation that was trivial by comparison to a nuclear holocaust and was uncomplicated by the effects of radiation. Can there be any doubt of similar scenes in North America and Europe among any concentration of survivors of a nuclear exchange with the kind of destruction certain to occur? At the end of World Wars I and II, the large shipments of food from the United States ultimately saved millions of lives. With nuclear war involving both Europe and North America there would be no source for such a rescue.

CONCLUSION

There are so many aspects of a thermonuclear exchange that would be devastating for the world as we know it that it may seem academic to single out food and nutrition. But in today's world everyone must be made to understand that estimates of numbers of potential immediate survivors of such an exchange are almost irrelevant, as compared with the full scope and magnitude of the destruction and disruption that would result. In addition to initial deaths from blast, fire, and radiation of over a billion people, with perhaps an equal number succumbing during the following year in the devastated regions, the consequences of a nuclear war and an ensuing nuclear winter would kill many more people in countries and regions not part of the nuclear exchange, especially among those already malnourished in developing countries.

Almost immediately, food and water supplies would become a desperate problem for survivors in North America and Europe, and famine and infectious disease, as well as radiation sickness, would soon begin to decimate them further. With a world depending heavily on North American food supplies, the tragedy of famine would not be limited to the warring powers. Food shortages and local famines would soon occur in other countries that are now heavily dependent on food imports. The nuclear winter, with a severe drop in temperature and lack of sunlight, would be a final disastrous blow. The long-term ecological consequences for developed countries cannot be predicted, but the short-term ones would certainly be disastrous. Everyone must come to understand the full consequences of a nuclear exchange, if the Four Horsemen of the Apocalypse — War, Famine, Pestilence, and Death — are not to ride again on an unprecedented scale. Nuclear war would end human society as we know it in the Northern Hemisphere and at least damage it for generations in the rest of the world.

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Health Watch

BEYOND PLOUGHSHARES

THOSE of us who feel keenly the suffering of the poor and hungry on this globe are constantly bewildered by the feebleness of efforts to render help. The matter is not exactly straightforward, of course. Both the countries in need and the donor countries have internal quandaries that obstruct easy answers. Nevertheless, the evidence of desperate need—drought and starvation in a wide band across Africa, for example; or the millions of cases of river blindness, of schistosomiasis, of malaria and filariasis; infant mortality rates of 200 per thousand live births—ought to call forth prompt and effective responses.

Why, then, the misdirection and ineffectiveness so evident in international programmes? The misdirection may be in part deliberate, a consequence of pursuit of "national interest", where aid is determined by political alliance. So much of our aid is used to reward allies and punish neutrals (the uncommitted). Half of all American military and economic aid goes to Egypt and Israel. One-quarter, right now, goes to El Salvador. It does not seem to matter that Nicaragua has an infant mortality rate of 90 (the US rate this year is 12). If they want our help, let them swear fealty to the anticommunist cause, or their children must die. Aid priorities are not set by the extent of hunger, the degree of devastation by diseases.

Another aspect of the misdirection of assistance may derive from a residue of colonialist attitudes. The bulk of our financial commitment specifically designated as "health appropriation" is actually for family planning. While there can be no question of the utility and necessity of such programmes, just the same, the fiscal emphasis on this is sometimes a subtly racist euphemism for population control, while ostensibly exhibiting concern for food supply. Furthermore, this earmarking of funds makes it extremely difficult to adjust the measures to a poor country's needs. All kinds of resources are so desperately short—a handful of physicians for millions of people in Mali, Niger, Upper Volta, or Chad, for example—that maximum flexibility is required.

The most forbidding obstacle to rational assistance programmes lies in the ruthless antagonism and hostility among the great powers. Military expenditure devours resources at a rate that dwarfs other national or international activities. Of the roughly $3 trillion ($\$3\times10^{12}$) that make up the US gross national product (GNP), less than 0·1% is allocated to "foreign aid". Only a fraction of that amount goes to providing food or technical advice, equipment, and loans to improve food growing potential; even less to educational activities and health services or improvement of health resources. By contrast, the cost of providing health services to the American people alone last year came to more than 10% of our GNP.

War and preparation for war is a big business. Last year, for example, the US sold weapons to the tune of $28 billion. That is about 1% of the GNP or more than ten times as much as the US put aside for "aid". A detailed and disturbing review of these issues is provided by Ruth L. Sivard in the latest edition of *World Military and Social Expenditures* (World Priorities, Box 25140, Washington, DC 20007). Mrs Sivard points out that, in 1982, military expenditures of the developed (read wealthier) countries reached the level of half a trillion dollars; the total contribution of all of these countries to economic assistance barely reached $25 billion. And such aid as is provided, heavily weighted in interest-bearing loans, has its own damaging impact. The economic recession of the past few years, coupled with uncontrolled inflation and high interest rates in the USA, has jeopardised the capability of the poorer countries to handle the financing. Bankers and industrialists, national officials, and political leaders are terrified of the possible bankruptcy of the world's financial structure.

In short, the ineffectiveness results from both the inadequacy and the inappropriateness of the effort. The US has made many studies of its "international health" activities. To date, nothing much in the way of improvement can be discerned. We lack a clear statement of what an international health policy is or should be, for one thing. We clearly lack a national commitment to foreign aid adjusted to the priorities of need in the world.

In a world as threatening as ours is today, where the fates of all are so inextricably intertwined, we obviously cannot afford to continue with the politics of apathy and neglect. We need to adopt a new language of concern, a commitment expressed by something like an international tax or tithe that will provide adequate financial support for reasonable and appropriate programmes. Senator Gary Hart, a presidential candidate, said it well: ". . . there is a latent idealism in the American people, a need to serve something other than their own interests. When it isn't tapped, people get cynical". So it may be, for other peoples and other nations as well.

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A common assumption of development assistance programs is that increased food production will lead to improved nutrition either directly or indirectly via increased family incomes. However, this assumption can be challenged on several grounds. First, at the present time per capita food availability in the Third World is adequate to meet the needs of the population (although there are isolated areas, in E. Africa for example, where there is an absolute shortage of food due to severe climatic conditions) (1). Why, then, are an estimated 400 million people malnourished? The Presidential Commission on World Hunger in 1980 (2) gave the answer quite simply: "... they are hungry because they are poor, and they are poor because they do not have jobs that provide a decent income" (p. 49). In most areas, it is the inequitable distribution of food and wealth that causes malnutrition, not inadequate total food production. This is not to say that food production will necessarily continue to keep pace with population growth in the future, but the malnutrition that exists today is not caused by a global lack of food. Therefore, increasing food production will not automatically solve the problem of malnutrition. This is borne out by statistics from areas where agricultural production has boomed, yet malnutrition continues unabated. In southern Mexico, for example, agricultural production increased 6-fold over a 13 year period as a result of an extensive drainage project, but the same proportion of children suffered second and third degree malnutrition after this period as before (3).

Economists often argue that increased food production will have a beneficial effect indirectly by increasing incomes of families producing that food. Whether this will have any impact on malnutrition depends on which families benefit from increased food production; hence the emphasis in current development lingo on helping the "poorest of the poor". But if the poorest families are landless, increased income via increased agricultural production is not likely unless employment opportunities and wages rise concomitantly.

Even for poor families with land, if increased food production causes a fall in the price obtained for those crops, increased income cannot be assumed.

The final aspect of the assumption that must be critically evaluated is whether increased family income will automatically lead to improved nutrition. If increased cash crop production by poor families comes at the expense of the production of food for home consumption, this may not be the case. In my own research in southern Mexico, children of families with greater income from commercial agriculture were not any better off, while families who were able to maintain home food production had better nutritional status. There are many demands for cash income that may divert it away from purchase of food. In addition, local prices for staple foods may increase if cash crops for export take the place of local food production (4).

For all of these reasons, development assistance programs must be planned with explicit attention to nutritional impact. In some cases, this has been taken to mean merely tacking on conventional nutrition programs as subcomponents of development projects. This is not sufficient. Nutrition must be included as an integral objective of development projects. To do this, it is necessary to target projects so that the benefits are not appropriated by those who least need them, and to examine each aspect of a project in terms of its ultimate effect on nutrition. This is rarely done by development agencies, partly because nutritional criteria for judging "success" of projects may conflict with economic criteria. For example, in the planning of an integrated development project in the Philippines, it was argued that targeting the project to the most malnourished farmers, who might be less productive due to anemia, for instance, would jeapordize project efficiency criteria (5). Fortunately, in that project nutritional considerations were taken seriously in the final design. All too often, however, as Levinson points out (5, p. 29), programs are "pursued in the traditional manner, with premiums on productivity, yield, and higher incomes for the producers. It may not be ultimately important to the planners of these programmes (a) that the producers themselves are not the hungry, (b) that the choice of production technology may not employ the hungry, or (c) that the crops produced may not be those consumed by the hungry."

When governments or development agencies do consider efforts to improve nutrition, they usually do so in terms of the conventional nutrition interventions with which we are all familiar: supplementary feeding programs, fortification of foods, and nutrition education. In some cases, such efforts are appropriate, for example, fortification of foods with vitamin A in areas where vitamin A deficiency is widespread. But not only do supplementary feeding and nutrition education programs fail to address the root causes of malnutrition, i.e. poverty, but their success rate in improving nutritional status is generally disappointing. The benefits of supplementary feeding programs are due primarily to income transfer effects, but there are more efficient ways for achieving this than the direct provision of food. Nutrition education, sometimes promoted in order to convince populations to consume imported foods with which they are unfamiliar, is of limited usefulness when poverty is the cause of poor diets: how do you tell a family to consume more fruits, vegetables and milk products when all they can afford is rice and beans? We would do better to target nutrition education to health care providers, who, sometimes inadvertantly, may have a negative effect on nutrition by discouraging breast-feeding, for example.

Because conventional nutrition programs by themselves generally do not focus on the causes of malnutrition, our concept of "nutrition programs" must be broadened to include strategies based on economic and health care interventions (6). "Integrated programs", for example, combine supplementary foods and nutrition education with primary health care and/or improvements in sanitation. The combination of components creates a synergistic effect in improving nutritional status: if children get sick less often, they are better able to make use of nutritious foods and vice versa. The most effective integrated programs are those that target the most vulnerable groups: pregnant and lactating women, infants and young children. All countries should have comprehensive programs for these subgroups. UNICEF's 4-point "GOBI" strategy to encourage use of Growth charts, Oral rehydration therapy to prevent deaths due to diarrhea, promotion of Breastfeeding, and universal Immunizations against childhood diseases should be supported to the fullest extent possible. The decreases in infant and child mortality that have been achieved through these efforts in some countries recently are extremely heartening. James Grant, executive director of UNICEF, describes eloquently how these strategies can lead to a "children's revolution" to break the cycle of malnutrition and poverty and to empower the poor to work towards the ultimate goals of economic justice and social development (7).

Some may fear that dramatically reducing infant and child mortality might contribute to even higher rates of population growth. But in reality, it has been well documented that improved child survival decreases birth rates by reducing the need for large families and by preventing the very short birth intervals that result when an infant dies and breastfeeding is terminated. Family planning is much better accepted when child survivorship is ensured, and in my opinion, should only be promoted under those circumstances.

Economic-based policies and programs are the other major tactic for alleviating malnutrition. Agricultural development efforts, if properly targeted, should be considered as nutrition interventions. Because up to 80% of Third World populations live in rural areas, economic development policies must focus on rural development and avoid the "urban bias" that has characterized economic growth in many countries. A more direct economic-based nutrition intervention is food price subsidies. When properly planned, subsidies for staple foods are self-targeted, since food is a higher proportion of expenditures among the poor than among the wealthy. However, food price subsidies may have a deleterious impact on rural producers if as a result agricultural prices are depressed. Governments then face the costly burden of subsidizing not only the cost to the consumer but the price paid to the farmer.

A serious impediment to the concept of considering economic-based projects as nutrition interventions is the common segregation of responsibilities into separate ministries within the government. Nutrition is generally by itself or within a ministry of health; rarely is nutrition integrated with the institutions charged with economic planning.

Ultimately, of course, the only long-term means by which to eliminate malnutrition is through broad-based national strategies of economic development, rather than through piece-meal individual development projects. But it is important to reiterate that economic growth alone will not reduce malnutrition. In fact, some of the most frequently-cited countries that have achieved rapid improvements in health and nutrition - China, Sri Lanka, Korea, and Taiwan, for example - did so at a time when their per capita GNP was extremely low. They were able to make these gains by emphasizing a more egalitarian distribution of land and wealth and by providing broad access to primary health care and education. The most important way in which the U.S. government can help to reduce malnutrition in the Third World is to develop a foreign policy that will support countries making these broad-scale changes.

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Although I have not specifically mentioned food aid in my written testimony, a good reference on that subject is:

Wallerstein MB. 1980. Food for War - Food for Peace: United States Food Aid in a Global Context. Cambridge, Mass: MIT Press.

PREPARED STATEMENT OF LOVELL S. JARVIS, ACTING ASSOCIATE PROFESSOR OF AGRICULTURAL ECONOMICS, UNIVERSITY OF CALIFORNIA AT DAVIS

Hunger and malnutrition affect many persons in less developed countries. The United States seeks to assist such persons for humanitarian and for strategic reasons. We need to understand the causes of hunger and malnutrition, and trends in their development, to design policies appropriate to dealing with these problems.

I would like to make three points. First, many developing countries have achieved high rates of economic growth during the last three decades by improving economic policy, strengthening political institutions, modernizing ideologies, and applying science to industry and agriculture. Foreign aid has contributed to these achievements. Second, despite this progress a significant number of countries have lagged behind. Malnutrition in these countries is serious and will be difficult to overcome. These countries must achieve sustained economic growth because this is the only long run solution. Nutritional programs can complement or hinder this effort, depending on how they are designed and implemented. Third, past experience with nutritional programs has resulted in useful lessons. Several lessons regarding economic policy are discussed, followed by illustrative examples.

Progress.

The evidence available suggests that much of the world has made substantial progress toward raising living standards during the last three decades. Per capita incomes, nutrition, infant mortality, life expectancy, and educational levels have improved in most countries, although the degree varies significantly across regions and countries Aggregating across all less developed countries, economic growth has been rising--at an accelerating rate. As a group LDC per capita incomes grew at more than 3 percent annually between 1960 and 1980. Their economic growth has been more rapid than was expected at the beginning of that period, and has significantly exceeded the long-term growth rates (about 2 percent per capita annually) achieved by the now-developed countries (e.g., the United States, Western Europe and Japan) when they began the process of sustained economic growth.

I say this not to create complacency but to suggest that development efforts have produced increasingly positive results. The process of modern economic growth and its benefits have been spreading fairly rapidly to an increasing proportion of the world's population. This success should encourage continued and, indeed, increased development effort, including international aid.

Larger, more widely held and closely monitored food stocks, a variety of international agreements guaranteeing grain supplies to nations in need, and the development of international grain markets have greatly increased food security. The likelihood of famine has been reduced even in Asia and in Sub-Saharan Africa, the two areas where malnutrition is most prevalent. Economic growth has reduced hunger and malnutrition in most of South America and in North Africa and the Middle East. Much of Asia--which was considered by many as almost beyond hope three decades ago--has made great progress. This includes Korea, Taiwan, Thailand, Sri Lanka and, especially, China--one of the world's largest and poorest countries. Progress has been achieved chiefly through economic growth, especially agricultural growth. Efforts to improve income distribution and to target at-risk groups through government programs have been secondary factors in most countries where success has been achieved to date (although Sri Lanka and China are important exceptions).

Such efforts require especially difficult and tendentious political decisions.

Lagging Behind.

Although much progress has been made, major problems remain. Incomes and nutritional levels in most of Sub-Saharan Africa are declining. Poverty and malnutrition are widespread in much of Asia, and economic growth in India, Pakistan, and, especially, Bangladesh is currently too slow to significantly improve the situation of the poor during the next two decades. Population growth in these areas is high and shows little sign of declining, making development efforts more difficult. Furthermore, economic growth and agricultural production have been lowest precisely in the poorest countries. Excluding China, per capita incomes in the lowest income LDCs have increased at less than 1 percent annually during the last 20 years. These countries constitute approximately one-third of the world's population, so that clearly the nutrition problem remains large.

Economic growth is essential in all of these countries to achieving a long run malnutrition solution, but economic growth--with trickle down--is not enough to solve the short run malnutrition problem. These countries need both policies designed to achieve economic growth and programs to provide their most seriously malnourished with specific aid during the short to intermediate run. This is a major challenge. They are being asked to undertake two difficult tasks simultaneously, in the face of scarce human and material resources. These poor countries have not initiated the process of sustained economic growth in large part because their political, social and economic institutions remain weak, they have few national resources, and their populations are relatively poorly trained and educated. Their governments have few tax revenues. External assistance can be extremely helpful to them, provided there is domestic will to use it wisely. Foreign aid can contribute moral support, policy analysis, and material assistance.

Useful Lessons.

We have learned substantially about malnutrition, its causes and cures. We can design and implement programs to alleviate it throughout the world. Several guidelines are listed below:

1) The Importance of Agriculture. The bulk of the world's poor are agricultural producers. They will achieve improved nutrition only if they can obtain more productive employment. In general, this requires increased agricultural production. In low income countries, a high proportion (averaging 70%) of the population is employed in agriculture. Industry will not be able to provide employment and income for the bulk of the population in the next four decades. Agriculture was long neglected in most development efforts where emphasis was placed on industrialization. A focus on agriculture is now recognized to be essential in nearly all low income countries. This requires new emphasis on agricultural incentives, research, extension, and infrastructure investment as an engine of economic growth.

2) The Importance of Getting Agricultural Prices Right. Establishing the appropriate incentive structure is essential. Prices affect both consumption and production, and there is ample evidence in LDCs that both producers and consumers respond rationally to prices. There is an important dilemma, however. Higher prices are needed to encourage higher agricultural production, but they have important costs. They reduce food consumption and have an especially harsh nutritional impact on the poor who spend a high proportion of their income on food. They also are often unpalatable to the politically important urban middle class. On the other hand, lower prices

benefit consumers but they reduce agricultural production, and thereby reduce overall economic growth and employment.

Experience shows that a long run solution to hunger and malnutrition requires that domestic producer prices generally reflect world prices so that efficient resource allocation is achieved. If prices are kept artifically low, new technologies will not be adopted, investments will not be made, and output and incomes will not increase at a rate adequate to eliminate malnutrition for the bulk of the population. The design of agricultural sector price policy is therefore an integral part of efforts to improve nutrition. Of course, if adequate price incentives are to be provided to producers, poor consumers will suffer during the short to intermediate run unless some complementary assistance is provided them. Targeted food aid is needed. Generalized food subsidies are not the answer because they are too expensive. Food aid is discussed more below.

3) Income Distribution and the Political Element. In most LDC's sufficient food is produced so that the entire population could be provided with adequate nutrition if the available food were distributed equally across all persons. However, incomes are not distributed equally and some persons are poor and unable to purchase sufficient food. To an important degree, therefore, malnutrition is a distributional problem, and political issues are crucial in the design and implementation of nearly all nutrition programs. The political issues must be faced. Nutrition programs are generally administered by middle class individuals whose control allows them to distort program instruments to their own benefit and to bypass the targeted poor. An example from Bangladesh is used below to illustrate how urban groups may benefit. Efforts have been made in some programs to decentralize administrative control to local communities to improve efficiency, but local

elites may be equally self interested and the local poor may be less willing to challenge these elites, on whom they depend for daily employment and other benefits, than national officials. The only solutions are establishment of simple programs involving clear criteria for participation and honest administration. Making aid conditional on improved policy design is reasonable.

4) The Need for and the Limits on Targeted Food Aid. There is general agreement that neither poverty nor malnutrition can be eliminated by growth alone during the next four decades under even the most favorable assumption regarding economic growth. Specific, targeted programs are needed to provide the most seriously malnourished individuals with aid: they require identifying those who are most harmed by malnourishment (such as young children), the specific nutritional problems they face, and the delivery systems which are capable of improving nutrition at an acceptable cost. The primary problem faced by food aid programs is their cost--efforts to distribute significant amounts of nutrients require large fiscal expenditures. Such expenditures can exhaust government revenues, leaving inadequate funds for investment or other welfare expenditures, and if exaggerated can work against both economic growth and welfare for the poor. Food distribution programs are also subject to substantial "leakage"--a significant part of program expenditures is received by persons who are not malnourished and/or result in nonfood rather than food expenditures. This can be alleviated by using "inferior" staple foods like sorghum or cassava which are nutritious and will be eaten by the poor, but which the rich would prefer not to eat even when they are cheap. Administrative requirements are great--and most developing countries have scarce administrative skills available. Despite

these problems, political will and good policy analysis can permit success--as the programs in Sri Lanka and China attest.

5) Management Considerations. It is obvious and yet frequently overlooked that management is an important constraint on project success even when political will is present. Large and especially complex programs requiring a large bureaucratic framework are unlikely to succeed. This is important because of the potentially positive interactions existing between nutrition, health, educational, agricultural production, and other investments. These synergistic interactions make it attractive to coordinate the design and implementation of such programs. However, the difficulty of administering such programs has resulted in significant efficiency losses in several cases. It is important to seek positive interactions, but programs must generally be kept simple and limited to a small number of closely related components.

6) The Need for a Feeback Loop. Much is known about nutrition programs, but much remains to be learned. All nutrition programs ought to be continously evaluated to make improvements in design and implementation. Errors must be identified and corrected. This can be done only if projects include specific provision for a monitoring and evaluation component and if it is given high priority.

Several examples illustrate points made above.

Bangladesh is largely an agricultural country. About 80 percent of its labor force is engaged in agriculture and 60 percent of its GNP originates in that sector. Rice accounts for 85 percent of the average per capita caloric intake of the population. Rice production is growing more slowly than the population and Bangladesh depends importantly on food aid to avoid famine. However, almost all food aid is chanelled through a "rationing system" which is designed to allocate food primarily to urban middle class residents who were provided permanent ration cards in 1974. These individuals, composing about 4 percent of the total population, received about one-quarter of total food distributed in 1978. The rural poor received a relatively small amount of food distributed, averaging only about one-tenth the amount received by middle-class ration card holders. This case illustrates that food aid is useful in reducing hunger and malnutrition only if it is channeled to those who are malnourished. Frequently, political and economic pressures induce governments to channel food aid to others. The urban middle classes, who are better organized and better situated politically, are frequently the principal beneficiaries rather than the rural poor. It is also true that Bangladesh has maintained domestic food prices below international levels to subsidize urban consumers at minimum cost to the government. The low food prices faced by producers are an important reason for slow food production growth.

Sri Lanka introduced a system of ration books in the early 1970s allowing a large proportion of its population, in both urban and rural areas, to purchase staple foods at low prices. This program contributed to a significant reduction in malnutrition and in infant mortality rates, but the untargeted program had a high fiscal cost, absorbing up to one-quarter of the government budget and reducing the amounts available for investment and expenditures on health, education, and the like. Cost pressures led Sri Lanka to adopt an alternative targeted system in 1979 which provided coupons to the poor using income, age and family size as criteria. Although the new system excludes about 10 percent of the poor, it is much more efficient and the budgetary cost was reduced to about half its former level. Efforts have been made to target other welfare and employment programs as well. This case illustrates that it is possible for even very poor countries to finance and administer nutrition programs with substantial impact. Good design (targeting) and administration (lack of corruption) are essential for success.

India has utilized concessionary milk aid to benefit both milk consumers and encourage domestic milk consumption. In many countries, concessionary food aid has depressed domestic food prices by adding to supply, and has thereby reduced domestic agricultural output. In India, however, the revenue obtained from milk aid is used to expand the system of national milk cooperatives. The cooperatives give technical assistance to producers, provide a reliable and profitable outlet for their product, and process and sell their milk to urban centers. The resulting regular cash incomes are important to many rural poor. Dairy animals are often maintained by women and children; their higher incomes are likely to improve household nutrition. The higher cash incomes are also used to purchase modern agricultural inputs, so that milk output increases agricultural output as well. This case illustrates that food aid can be designed to improve nutrition while simultaneously stimulating domestic agricultural production rather than depressing it.

To summarize, progress has been and is being made. There is reason to redouble efforts, not to quit. Serious problems remain and they will be difficult to solve, but lessons have been learned which can serve as useful guidelines. Efforts to improve nutrition for the most seriously malnourished are essential, but economic growth, especially in the agricultural sector, is the only long-run solution.

7/20/84 JS-25

Prepared Statement of Richard A. Redder, Vice President for Program, Meals for Millions/Freedom from Hunger Foundation

I am sorry that our President, Peter J. Davies, could not be here to provide this committee with this statement. He has asked me to convey his strong conviction that the Select Committee can, and hopefully will, play an important role in focusing attention on the critical problem of world hunger and on ways to overcome it.

First, a word on who we are: The Meals for Millions Foundation was founded in 1946 as a voluntary relief agency by Clifford Clinton, a California restaurateur who fed the hungry free in his Los Angeles cafeteria. His search for a low cost food supplement with which to feed still greater numbers here and overseas led to the development of Multi-Purpose Food, a high nutrition protein, vitamin and mineral supplement. Shiploads of MPF were sent overseas and to hungry communities in the United States between 1947-77. One of the recipients was the Dr. Albert Schweitzer Hospital in Lambarene.

In the early 1970's, the Board of Trustees and a professional staff recognized that a relief feeding program was essentially only a stopgap response to problems of hunger and malnutrition. Since then, Meals for Millions has emphasized self-help programs -- involving teaching people to grow food, build latrines, dig wells, raise small animals and organize themselves.

In March 1979, the Board of Trustees agreed to become successor to the American Freedom from Hunger Foundation and to amend Meals for Millions' charter, adopting a new name: Meals for Millions/Freedom from Hunger Foundation.

In 1983 the Foundation moved from its inadequate headquarters in Santa Monica, California to a new international center in Davis, California close to the University of California at Davis which is a leading institution in agriculture, food science and nutrition.

Today, Meals for Millions has approximately 90 staff persons, (professionals and support staff) working in eight countries including the United States. Most staff are nationals of the countries in which they work. The dedication, commitment and professional competence of this staff has led to an enviable reputation as an effective development agency working to overcome hunger and malnutrition in many of the poorest countries on the globe.

Our orientation is world wide with programs in Latin America, the Caribbean, Asia and Africa, as well as in nutritionally disadvantaged communities in the United States. In 1984, Meals for Millions is operating Applied Nutrition Programs in seven countries: Ecuador and Honduras in Latin America; in Antigua in the Caribbean; in Kenya and Sierra Leone in Africa; in Thailand in Asia and in the Southwestern United States in and near Tucson, Arizona. We expect to start or are already commencing new Applied Nutrition Programs in Nepal, Togo and Bolivia.

A volunteer Board of Trustees establishes policy and overall organizational direction and consists of persons from varied disciplines. It includes businessmen, church persons, professional and academic people.

Sources of Support

Meals for Millions does its work with a small budget, 2.2 million for 1984. We are very proud of the fact that 75% of this amount goes directly into programs, only 7-8% is used for administration and 14-17% to raise the funds.

Our support comes through individual donations from the general public about 50%; churches about 12-15%; foundations and corporations 15-18%; Agency for International Development of the U.S. Government 25-30% and others 0.5%

Development Philosophy, Goal and Approach

Let me sketch briefly the world hunger problem as we see it. Chronic hunger and malnutrition, along with world peace and nuclear disarmament, are among the most compelling problems of our time. World food production has increased dramatically over the past decades, yet hunger and malnutrition have not declined. In many African countries food production is still declining and, in fact malnutrition is increasing rapidly.

Most observers agree that the world is currently producing enough food to feed everyone, and yet today 400-500 million people remain severely undernourished with perhaps a quarter of the world's population receiving an inadequate diet. Most of the undernourished are young children. The starving child skin-and-bones image -- an image which is too often used to represent the developing countries -- needs to be replaced by a greater international understanding of what child malnutrition really means. As James Grant, Director of UNICEF notes, while more than 40,000 children died from malnutrition and infection every day last year, for every child who died, six now live on in hunger and ill health which will be forever etched upon their lives.

Furthermore, the World Bank estimates that about a billion people live in absolute poverty. Malnutrition is esentially a product of that poverty. The causes of that poverty are over-population, unemployment, poor sanitation, lack of potable and irrigation water, inadequate health services, low agricultural production and poor dietary habits, among others.

As many have come to realize, and I believe it is important for the Committee to focus on this, food aid, while necessary, does not get at the root causes of poverty and malnutrition and can be a disincentive to production and to overcoming poverty. These root causes are manifold and complex. Women, previously ignored, are now recognized as crucial to food production, nutritional improvement, primary health care and family planning. Hence education and training of women can have a major "multiplier" effect on a community's and country's welfare and development. Environmental factors also inhibit overcoming poverty and need to be addressed. Likewise, overpopulation is a major factor that contributes to poverty and malnutrition so that family planning information and services need to be included in development programs.

Philosophy: How then do we, a moderately sized, innovative development agency do something effective to overcome these debilitating and inhibiting problems just touched on above?

We believe that only through a long term development process in which people change their own lives through their own efforts, will poverty and world hunger be overcome. People must be empowered to control their own development if they are to break out of the vicious cycle of poverty. This is what we mean by Meals for Millions' moto: "Self-Help for a Hungry World."

We believe, also, that our people-to-people approach, because it facilitates a substantial degree of community participation, is the best way to create opportunities for malnourished, low-income people in developing communities in the U.S. and abroad, to recognize and develop their potential. This people-to-people approach is also less capital intensive and more adapted to suit local resources and conditions and that furthermore, this qualitative factor is as important as the improved farming methods, better nutritional practices, and good sanitation. To put this philosophy into practice, our Board has adopted as Meals for Millions' goal:

First, to strengthen the capabilities of people in developing communities to solve their own food and nutrition problems;

Second, to do so within the framework of the community's economy and culture;

Third, to give special emphasis to nutritional needs of infants, children, pregnant and lactating women; and

Fourth, to advance and perfect the "participatory" or self-help approach to achieve lasting development.

Our Approach: To realize this four-fold goal, Meals for Millions has developed an integrated approach which we call Applied Nutrition Programs. Meals for Millions conducts these Applied Nutrition Programs in association with indigenous organizations (private, church, state, local and national).

We do not seek to duplicate all disciplines, but to collaborate with other international and, in particular, local groups.

We seek recognition and approval of the government involved at all levels, but do not depend on them.

To the extent possible, we employ local national personnel rather than placing Americans overseas.

Our approach is to stimulate change rather than simply to transfer technology or knowledge.

Above all else, our task is to act as a motivator, catalyzer, organizer, so as to mobilize local resources -- both human and material -- to carry forward programs and to continue them after Meals for Millions support and technical assistance ceases.

Integrating and linking community services and resources is cost effective. It allows Meals for Millions to extend its program activities beyond the scope of its own resources and to strengthen the service delivery capability of local organizations. This, in turn, leads to a self-sustaining process which will continue once Meals for Millions withdraws its support and technical assistance.

It is not Meals for Millions' purpose to attempt to overcome poverty and malnutrition in every community in each country in which we work, but to provide an example and a methodology that perfects the self-help and participatory process so that it may be extended by others. Thus, our objective is to establish models that can be reproduced and multiplied manifold by government.

What impact are we having? Our programs are having a measurable, significant result in a relatively short time, 5-10 years. For example, a recent AID evaluation of our Applied Nutrition Program in the Olancho Department of Honduras, after only five years of work, shows a remarkable 24% overall reduction in serious malnutrition among young children, and 70% reduction among a group of 100 children closely monitored over the five years.

In Honduras, as catalysts and enablers, Meals for Millions' staff have developed fruitful working relationships with the local health center as well as with government agencies and the villagers themselves. Result: The Ministry of Health is so impressed by our child health and nutrition monitoring that it has asked us to train government nurses and is reviewing the program for possible region-wide replication.

Last year in Honduras, Meals for Millions established an in-kind revolving loan fund which supplied farmers with fertilizer, seed insecticides, tools, fencing and grain storage silos. With this modest assistance, farmers are improving the quality of their life. Honduras is but one example and we are receiving a similar response and are having as great an impact in other communities and countries.

While I could go on with many more examples, the point I want to leave you with is that development can take place if the people to be benefitted are an active part of the process. The problems of hunger, malnutrition, and undernutrition and poverty are solvable if one recognizes that it takes time, commitment and patience to build the self reliance and people involvement so essential to achieving lasting development.

I thank you and would be glad to respond to questions.

PREPARED STATEMENT OF ALLEN G. MARR, DEAN, GRADUATE STUDIES AND RESEARCH, UNIVERSITY OF CALIFORNIA AT DAVIS

Mr Chairman, Members, Ladies and Gentlemen:

My name is Allen G. Marr. I am Dean of Graduate Studies and Research of the Davis campus of the University of California. Since 1975 I have had executive responsibility for international programs of the Davis campus.

The Davis campus of the University of California is one of the leading universities in international programs. Our students are drawn worldwide. Our faculty have studied in most of the countries of the world. Our current programs are in Egypt, Morocco, Kenya, Mexico, Brazil, Peru, and Indonesia. We were the first university to enter into a host country contract and were selected to manage the first Collaborative Research Support Program developed under Title XII of the Foreign Assistance Act.

Our international programs have been mainly technical agriculture. In Egypt we have introduced new tomato varieties, established facilities and trained personnel to propagate olives and dates, restored beekeeping, and increased rice yields. In western Kenya we are introducing the dairy goat. In Peru we are working to inprove flocks on highland range. All of these programs have involved collaborative research with local scientists and training of students to become the next generation of scientists as well as the direct transfer of useful technology to these developing countries.

To a lesser extent we have been involved in policy and economic analysis. In Egypt we have collaborated with Egyptian economists to examine such matters as price policy, farm labor, trade, and marketing. This effort not only produced policy analyses for the Egyptian government but also trained a new generation of economists who are continuing this important work.

Less often we have become acquainted with the farmers in the sense of developing a deep understanding of the basis of the choices they make in their daily lives--choices which are collectively critical to the nutritional welfare of the whole country.

Research universities such as the University of

California are centers of inquiry. Our mission is the search for new knowledge and understanding. We can be expected to be successful participants in international development only insofar as our participation connects to that central mission. There is much that we collectively can do but there is much more that must be done which is beyond reach of a university or of all universities.

One of the reasons that the Davis campus began its organized international programs was the assumption that such engagement would offer our faculty and students an opportunity for scholarship and a broader perspective of contemporary issues; this objective has been achieved. Another reason was the humanitarian and moral consideration that we might help to mitigate hunger. In fact, in 1974, just before we began our international programs, the campus published a report entitled 'The Hungry World - A Challenge to Agriculture' in which the population and food status of the world were projected for the future by a task force of faculty from several fields. This study had a great deal to do with our choice of greater engagement in international affairs. Thus far, the effects of our efforts have been marginal.

In considering ways in which this and other universities might be more effective in an overall stragegy to relieve hunger let us focus not on global strategies or on the immediate relief of hunger in a country suffering famine as a consequence of flood, drought, or disease but on a country with chronic malnutrition: too many people and too little food. Technical assistance to the agricultural sector may yield more food but alleviation of hunger will likely be short lived. The gains made will be lost to an increasing population.

In its simplest terms a stragegy might involve some combination of population limitation, trade to produce foreign exchange to import food. and increased domestic food production. Even in its simplest terms such a strategy would involve several entities: the foreign government, the United States government, international agencies such as FAO and World Bank, and scientists and other scholars from U.S. universities collaborating with counterparts in the foreign country. The role of U.S. universities would be not only the familiar one of providing technical assistance but also to develop and analyze economic and social policy options. The main difference between this sketch and most of our present programs is that the focus is not singularly on food production but on all of the main factors which affect the nutrition of the people. The Davis campus has a team of faculty now planning just such a program.

Mr. Chairman, members of the committee, hunger is terrible beyond description. I spent my childhood on an Indian reservation in Oklahoma in the '30s. I attended a one room school with a potbelly stove ,on which cooked a pot of beans provided by a federal program. For many of the children that hot lunch was most if not all of their food for the day. Some had swollen bellies symptomatic of chronic malnutrition. A few died later of disease which is the sequel. This is the stuff of nightmares.

Thank you.

PREPARED STATEMENT OF GRETTA GOLDENMAN, COORDINATOR, FOOD FIRST EDUCATION PROJECT, INSTITUTE FOR FOOD AND DEVELOPMENT POLICY

Also representing the Institute: Laurie Rubin, author of the Food First Curriculum
Judith McGovern, teacher at Roosevelt Middle School, San Francisco
Elias Welch, student at Roosevelt Middle School, San Francisco

My name is Gretta Goldenman. I coordinate the Food First Education Project at the Institute for Food and Development Policy, a nonprofit research and educational center based in San Francisco.

We applaud this committee for recognizing the importance of educating the American public about hunger, and we thank you for the opportunity to share our experiences with you here today.

The goal of the Food First Education Project is to reach students and educators with accurate and objective information about the causes of hunger in a way that empowers them to work to bring about the changes needed to end hunger. We work towards this goal by producing materials for the classroom and then distributing them to the widest possible audience. In May of this year, after three years of development and testing, we published the Food First Curriculum for the sixth grade.

Today, there are four points I want to cover:

1. why it's important to teach children about hunger;
2. misconceptions about hunger that discourage people from acting or that in themselves perpetuate hunger;
3. how we set about developing the Food First Curriculum to meet childrens' special educational needs.
4. our experiences in introducing the curriculum into public school classrooms, and our suggestions for wider implementation of hunger education.

Why it's important to teach children about hunger

The problem of hunger can seem overwhelming even to adults. What can an adult, let alone a child, do to help solve such a vast problem? Most people would prefer to ignore the uncomfortable feelings generated when confronted with the reality of hunger.

Yet we cannot avoid the subject. As Bea Krivetsky, a teacher at Commodore Stockton Elementary School in San Francisco, told us: "These children know about hunger already. They see people taking garbage from the cans on the schoolyard. But nobody talks about it!"

Not only has the striking rise of people living in poverty made the homeless and hungry of America more visible to us today, but children themselves are disproportionately affected by hunger.

Though one out of seven Americans overall lives on an income below the poverty line and thus at risk from hunger, among children the proportion is one out of five. For a minority child living in a female-headed household, the chances of living in poverty are four out of five.

Worldwide, one out of four people chronically do not get enough to eat. Of the estimated 40,000 people who die each day from hunger or hunger-related diseases, the majority are children. High infant mortality rates are considered a telling indicator of undernutrition among a given population.

But all too often the concerns children may have about hunger are not taken seriously. They are made conscious of an adult's silence or discomfort when they ask questions about hunger.

To compound feelings of helplessness, they are often told that the solution is for them to finish eating the food off their plates—a silly suggestion that not only reinforces the myth that there's a scarcity of food but that trivializes their concern.

Or children are told that they should share their pennies with the poor—that the solution is charity. This leaves children with the impression that hungry people are pathetic and helpless, needing our pity. Children are quick to grasp that, if the poor cannot help themselves, their meager contributions are a useless gesture.

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Thus the idea that hunger is an insuperable problem and that individuals can have no impact is instilled early on.

This is a tragedy, because learning about hunger and its causes can be the starting point for a deeper understanding of other social problems and for the development of skills and attitudes fundamental to carrying on our goal of building a nation with a genuine citizen-involved democracy.

The challenge then is: How can we talk about hunger without engendering feelings of helplessness and despair? How can we teach children that change indeed is possible?

Exploding myths about hunger

At the Institute for Food and Development Policy, our efforts are not just to build awareness about the extent of hunger. It's equally important to empower people, to help them learn their own ability as citizens to participate in building a world where all people are ensured the resources they need to feed themselves.

Many people are discouraged because they can see that the old "solutions"—charity, more food production—just aren't working. Despite billions of dollars in foreign aid, despite the so-called green revolution, despite the pledges to end hunger made by international conferences, more people are hungry today than ten years ago, within the United States as well as in the third world.

How can people be motivated to act? We have found that the most important step for people is to learn why hunger persists in the midst of plenty. In our experience, people overcome despair as they begin to understand root causes and to make sense of what was before just a jumble of frightening facts. But to get to this understanding, it's necessary to break through the many misconceptions about hunger—myths perpetuated in the media and in textbooks, myths that keep people from acting.

The image that most Americans have of hunger—famine induced by natural disaster—has little to do with the day-to-day experiences of the 500 million to one billion people who chronically do not get enough to eat.

Hunger is not caused by scarcity—there's plenty of food for all. Hunger is not caused by overpopulation—there's no correlation between population density and the presence of hunger. Hunger is not caused by the laziness of the poor—to survive in a harsh world deprived of resources requires immense effort.

Unfairness—the cause of hunger

Hunger has less to do with the physical limits of our planet than with human-created systems that perpetuate unfairness. People are hungry because they are denied access to the resources they need to feed themselves—whether land or credit or jobs.

In a village in Bangladesh, those who have lost their land because of usurious moneylending practices are condemned to live at the edge of survival, in chronic hunger. In the United States, those who have been cut out of decent-paying jobs or who are unable to work for pay—the disabled, the elderly, mothers of small children—may find themselves trapped into lives of poverty and desperation, at risk of hunger.

Since unfairness is at the root of hunger, the solution cannot be to increase food production per se. United Nations studies have shown that where the "green revolution" was introduced without addressing differences in land ownership, access to credit or other inequities, poverty and hunger actually deepened even as crop yields went up. Foreign aid, when given to a government that is itself part of an inequitable system, will end up strengthening the very forces the hungry must change in order to achieve access to the resources they need.

Once we grasp that hunger is caused by unfairness and that this unfairness is maintained by systems that favor a privileged few, the path towards change becomes clear. We begin to see that the solution to hunger is to create more equitable and democratic societies, where self-reliance is encouraged and where people are ensured access to the jobs, the land, or the other resources they need to feed themselves.

We perceive how our own daily life choices--what we eat, where we shop, what we try to learn, where we work, and so on--connect us personally to the causes of hunger and to the solutions.

Children have an innate sense of fairness. When confronted with the injustice of hunger, their instincts are to share. As parents and educators, we have a choice about what we teach our children. They can learn that inequity is inevitable and become cynical and apathetic. Or we can reinforce their natural impulses toward fairness.

Developing the Food First Curriculum to meet children's special educational needs.

Since the Institute's founding, parents and educators have asked our advice on how to teach children about hunger and for materials designed for children that would counter the myths about hunger still so prevalent in textbooks and the media.

In response to these requests, we first investigated what is available for children. Laurie Rubin, then a graduate student at the University Of California at Davis concentrating on food and hunger problems, reviewed over 90 educational resources, ranging from curricula to audiovisuals and games. Though many materials had excellent exercises building an awareness of hunger, very few tackled the more difficult questions of why hunger, and what we as individuals could do. Perhaps even worse, almost all painted a picture of the third world poor as helpless and passive, needing our assistance in order to be fed.

So we developed the Food First Curriculum for elementary and middle school students. It took us three years in all. Laurie Rubin conceptualized and wrote the curriculum as her masters project in community development. We then tested the curriculum in public school classrooms.

The curriculum itself is a multidisciplinary program that explores global perspectives, farming, the path of food from farm to table, causes of global hunger, who goes hungry in the U.S.A., and ways to work for change. Its six units contain 35 creative activities and over 25 student worksheets utilizing social studies, language arts, reading, music, drama, nutrition, and art. Though aimed at sixth grade students, many of the activities contain modifications for fourth through eighth grades.

Becoming part of the solution

In developing the curriculum, we were concerned that children be given more than just the facts about hunger and an understanding of its root causes. If ending hunger means people working together toward more fair economic and political systems, then children need to learn not just the facts but group problem-solving skills as well. The process of learning itself becomes part of the solution.

The Food First Curriculum teaches children to ask questions about the world, to not just accept it the way it is if they feel something is wrong. It teaches that the way to end hunger is to work towards greater participation and fairness--skills and values for good citizenship that children need to incorporate to carry on our democracy.

What did we think children needed to learn?

The first unit, **Why Do People Around the World Do Things in So Many Different Ways?**, seeks to instill in children an appreciation of different cultures and of different points of view through activities like "There's More Than One Way to Look at Something." It also introduces cooperative problem-solving skills.

Where Does Our Food Come From? builds awareness that our food originates from places all around the world and that people who work on farms to grow our food work very hard. In this unit, we encourage teachers to take children on a field visit to a farm, for instance, and there is a role play that graphically shows how the American family farm system today is in crisis, with farms dwindling in numbers and growing in size.

Unit III, How Do We Get Our Food?, explores the path of food from the land to our tables. It builds consumer awareness among children about the consequences of food processing and advertising. A field trip to a supermarket shows which brands of food are controlled by just a small number of companies in the food industry and which foodstuffs are not.

The fourth unit, Why are people hungry?, looks at how one out of four people on this earth chronically do not get enough to eat and investigates the root causes of this tragedy. In a simulation game, "How Does the World Eat?", a snack food is distributed to the class in the same proportion as food is distributed around the world. That is, one-fourth of the children receive little or nothing, while a few students receive more than they can eat. The resulting class discussion usually leads to attempts to redistribute the food more equitably, which in turn leads to an understanding of the difficulties of negotiating fair solutions to world problems. Through a puppet play that demonstrates how family size is affected by different cultures, children learn that economic necessity, not ignorance, causes parents in rural societies to have large families. Readings about people in a Bangladesh village show that the poor are people with dignity who deserve our respect.

Who's Hungry in the U.S.A.? brings attention to the hunger that exists in our own country. A simulation game, "Making Ends Meet", helps children to understand that being unemployed or having a limited income makes it hard for people to buy enough food, even though they may be hardworking and intelligent. Other activities show how some groups of Americans are more likely to go hungry than others.

The last unit, "What Can We Do?", is perhaps the most important section of all. The key concepts in this unit are that ordinary people can make changes, and that children and others can work on large problems by starting with themselves and their local areas. Children learn concrete citizenship skills, such as letter writing and community education. They also learn that hunger is not inevitable.

In the activity "What Does Change Mean?" in Unit VI, children are asked to describe changes they have seen in their own classroom during the year, and then expand to include changes in their neighborhoods, country,and the world. They compare changes for the better with changes for the worse, and also talk about who causes change. One teacher said, "I was moved by how powerful this activity was." Her class discovered that by working together, they could effect more significant changes than by working alone.

In Bea Krivetsky's class, the children became energized with the idea that change is possible and that they can make it happen. Soon her students were writing essays on how to improve everything from San Francisco's cable cars to U.S.-Soviet relations. As one child told Krivetsky: "Maybe it won't be enough...but at least I helped."

Reactions to the Food First Curriculum

Food is the most basic human need and right. Children immediately grasp its importance. They respond to being asked to deal with a real-life, not a made-up problem. They are stimulated to learn new skills because they can see how these skills are relevant to the information they want to acquire.

Empowerment. The Food First Curriculum takes special care not to overwhelm children but to motivate them to start at their own level and work to bring about change. Alice Lukas at San Francisco Community School told us how her students found the curriculum empowering: "One of my students normally has a very difficult time writing out her thoughts. The Food First Curriculum really motivated her. She labored and labored to produce a concise two-page essay."

Many teachers have praised the Food First Curriculum for its openendedness. Children are not told the answers, but asked to deal with a problem that has no easy answers. This stimulates intense discussion among the children. They become involved because their views are being taken seriously.

Challenging. Other teachers, accustomed to textbooks and worksheets with specific questions and answers, have found this aspect of the curriculum uncomfortably demanding. It does ask a lot of the teacher—an overview of the subject, the ability to lead discussions, the courage to admit that one does not know all the answers.

Values. Many schools and teachers are afraid of approaching a subject like world hunger, because it resists being categorized into a discipline like social studies or reading. Even scarier, it deals with questions of values. For teachers, that carries the threat of being controversial, of moving beyond rote subjects into areas of uncertainty.

Yet more and more educators today are calling for the introduction of higher thinking skills, including synthesis and value formation, into the classroom. In 1981, the California State Department of Education introduced a new framework for history—social science education with these words: "Preparing people to become humane, rational, participating citizens is an awesome task. It is one which is shared necessarily by many institutions in a democratic society. Acting alone, no single institution and no single program of studies is sufficient. Even so, schools and the history—social science program, kindergarten through grade twelve, must bear a major portion of that responsibility. Schools are the institutions created by society for the express purpose of directing students toward acquiring the knowledge, skills and values essential for effective citizenship."

Rigid curricula restraints. Another difficulty within public schools is the pressure they are under for accountability—certainly an appropriate demand in itself. Yet often the reaction of schools has been to design and implement more rigid curricula, and to place teachers under time and content restraints, limiting their ability to use outside materials like the Food First Curriculum. This rigidity often serves to make the classroom a boring, irrelevant environment for students and actually hampers the learning process.

Fun. Contrast this with the experience of Rhea Irvine at Berkwood Hedge

School, who termed some of the activities of the curriculum "Food First math." Irvine watched her children learning concrete mathematic skills, such as percentages and graphing, unusually quickly, because these skills were being applied to a topic in which they were intensely interested.

In our efforts to get the Food First Curriculum into as many classrooms as possible, the Institute itself is faced with a considerable challenge. As a small non-profit center, we do not have the resources that most educational publishers must extend in order to get adoptions or certifications by each individual state curriculum department, though we have begun the process within the State of California.

Therefore, we must largely rely on individual teachers, administrators and parents who are sympathetic to the issue of world hunger. A number of individual supporters of the Institute are currently working to get the curriculum introduced into their local schools across the country. Other teachers involved in global education or peace advocacy have been supportive, because they perceive the curriculum as a resource exploring peace as something more than the absence of bombs, and as a multicultural experience that allows children of all races to appreciate diversity and to feel self-pride.

Future perspectives

As Bill Henderson, a teacher from Massachusetts who tested our curriculum, wrote us: "Although kids shared many of the same myths about the causes of hunger as adults before these lessons, they seemed to have an empathy as to how control of land and productive resources could be the cause of poverty and hunger. They were more bewildered, though, as to how people have been oppressed so long. 'Why don't they do something about it?', they asked."

When I reflect on the larger question of how to get the issue of world hunger taught in classrooms across the country, I recall that our nation has faced similar challenges in the past. It took nearly a decade, for instance, for the gains of the civil rights movement and the push to end gender-related stereotypes to begin to be reflected in texts and other teaching materials.

Perhaps the greatest contribution that you on this committee can make is to bring about a similar national awareness that hunger is indeed a growing crisis, that this crisis is unnecessary, and that we do have the power to change this outrage. Such a national awareness will help concerned parents and teachers in their efforts to ensure that the facts about world hunger, as well as the skills and values needed to build a more fair and democratic society, reach every child in America's public schools.

Therefore we ask this committee, in the confidence that you too are outraged by the continuing scandal of hunger in the midst of plenty, to use your powers to help create the national commitment needed to end the unfairness underlying hunger in this country and overseas.

Food First Curriculum

by Laurie Rubin

Foreword by
Frances Moore Lappé

An integrated curriculum
to help Grade 6 students learn
the paths of the food they eat, the
roots of hunger here and abroad,
and how they can act locally
on a global problem; with
modifications for
Grades 4-5 and 7-8

Institute for Food and Development Policy
San Francisco, California U.S.A.

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To Harry Chapin

I distinctly remember hearing Harry Chapin sing Flowers Are Red (see next page) for the first time in Bailey Hall at Cornell University on December 7, 1977. I have been singing it to myself ever since. This curriculum was designed in the spirit of helping all children see all the colors of the flowers.

When I first wrote those words in June 1981, little did I know that one month later a car wreck would tear Harry from this world. In his brief lifetime (1942-1981), Harry Chapin gave endlessly of himself to build a better world. Each year he played more than 200 concerts, over half of them benefits. He raised money for the arts, for social services, for Ralph Nader-affiliated groups, for political campaigns, and predominantly for anti-hunger organizations. In 1975 he and Bill Ayres founded World Hunger Year, Inc. (see page 16 to write for more information on WHY).

Harry combined boundless, vibrant energy with intense self-honesty to form a powerful, gentle, caring person. With his amazing ability to understand human emotions he reached out and touched people everywhere. He touched me. Listening to and talking with Harry Chapin changed the course of my life. In 1979 I rearranged my life to commit my future to social change. Perhaps this curriculum will spread a little Chapin-style enthusiasm for ending hunger to children who will never have a chance to experience Harry's warmth and enthusiasm.

Flowers Are Red by Harry Chapin

The little boy went first day of school,
He got some crayons and started to draw.
He put colors all over the paper
For colors was what he saw.
And the teacher said, "What you doin' young man?"
"I'm paintin' flowers," he said.
She said, "It's not the time for art young man,
And anyway flowers are green and red.
There's a time for everything young man,
And a way it should be done.
You've got to show concern for everyone else
For you're not the only one."
    And she said, "Flowers are red young man,
    Green leaves are green.
    There's no need to see flowers any other way
    Than the way they always have been seen."
But the little boy said ...
"There are so many colors in the rainbow,
So many colors in the mornin' sun,
So many colors in a flower, and I see every one."
Well the teacher said, "You're sassy.
There's ways that things should be
And you'll paint flowers the way they are
So repeat after me ..."
    And she said, "Flowers are red young man,
    Green leaves are green.
    There's no need to see flowers any other way
    Than the way they always have been seen."
But the little boy said ...
"There are so many colors in the rainbow,
So many colors in the mornin' sun,
So many colors in a flower, and I see every one."
Well the teacher put him in a corner.
She said, "It's for your own good.
And you won't come out till you get it right,
And are responding like you should."
Well finally he got lonely,
Frightened thoughts filled his head.
And he went up to that teacher
And this is what he said ...
    And he said, "Flowers are red,
    Green leaves are green.
    There's no need to see flowers any other way
    Than the way they always have been seen."
Time went by like it always does,
And they moved to another town.
And the little boy went to another school
And this is what he found
The teacher there was smilin'
She said, "Painting should be fun.
And there are so many colors in a flower,
So let's use every one."
But that little boy painted flowers
In neat rows of green and red.
And when the teacher asked him why
This is what he said ...
    And he said, "Flowers are red,
    And green leaves are green.
    There's no need to see flowers any other way
    Than the way they always have been seen."
But there still must be a way to have our children say ...
"There are so many colors in the rainbow,
So many colors in the mornin' sun
So many colors in a flower and I see every one."

Copyright © 1978 Chapin Music

Foreword

So often Americans think of the hungry in the third world as people totally unlike themselves—as hopeless, helpless, and ignorant. All of our work at the Institute, including this curriculum, attempts to break down such stereotypes by demonstrating the many parallels between the causes of hunger in the Third World and our own food and agricultural problems.

Though food is the most basic human need and human right, the hungry are increasing—both in absolute numbers and as a percentage of the world's people. In the third world, twenty million people a year—mostly children—die each year from hunger and hunger-related diseases. In some U.S. inner cities, infant mortality rates linked to material malnutrition are as high as in some underdeveloped countries.

Why? Our research here at the Institute demonstrates that hunger is not caused by scarcity. The world produces enough in grain alone to feed every person 3,000 calories a day, as much as the average American eats. Hunger is not caused by too many people, or insufficient technology, or ignorance. Both in this country and overseas, more and more people go hungry because they do not have the land, the jobs, or the other resources they need to feed themselves. Around the world, a privileged minority is concentrating its economic control over these resources at the expense of the poor.

Awareness of these trends could lead to frustration and discouragement. So many—young and old alike—feel overwhelmed by problems of a global scale. How can we counter this paralyzing despair?

In our experience, people overcome despair as they begin to understand root causes. As an understanding emerges, we begin to make sense of what before was a jumble of frightening facts. Most important, we begin to see how our own daily life choices—what we eat, where we shop, what we try to learn, where we work, and so on—connect us personally to the causes of hunger and to the solutions.

Many times, messages to children about hunger play upon feelings of guilt. We reject this approach. We believe that many people, especially young people, are looking for ways to understand the world that will give greater meaning to their daily lives. Instead of a depressing and paralyzing subject to be avoided, we have come to see that understanding the roots of hunger can be a potent tool in awakening people to their power to change themselves and the world around them. It is in this spirit that we offer this curriculum guide.

Frances Moore Lappé
San Francisco, 1984

Acknowledgements

The list of those deserving thanks is very long. People have been so genuinely helpful every step of the way. My most special thanks to Gretta Goldenman of the Institute for Food and Development Policy (IFDP), who has been a constant source of ideas and encouragement from the birth of the idea for a children's curriculum to the final design.

The following people all gave invaluable criticisms of the first draft, which also served as my Masters Project at the University of California at Davis: my good friend and hunger teaching partner, Glenn Schoenfeld; my Masters Committee, Isao Fujimoto, Marc Pilisuk, and Miriam Wells; plus the many other educators who helped.

I am grateful to these people who took so much time out of their busy schedules to help me improve the second draft: Therese Caroll Grant, Sister Linda Laine, Jim McGinnis, Jeff Tracy, and Susan Van Dreser.

I am indebted to the teachers who took responsibility for classroom testing the activities of the **Food First Curriculum**, especially Bea Krivetsky and Rhea Irvine. It was truly an inspiration to watch them communicate such important concepts to their eager students. Also, thanks to Eileen Atkinson, Ellen Champlin, Gil Guillermo, Ethel Kirk, Alice Lucas, Annette Mannix, and Nancy Zimmerman.

Throughout the writing process there have always been IFDP volunteers, staff members, and interns who heve made important contributions. Thanks to all of you. In particular, I am grateful to Russell Norvell for the energy he put into getting the curriculum into the schools; to Julia Rosenbaum, who always has just the right helpful idea; to Mal Singer for his help with the schools; to Lori Simon and Merle Goldman for help with the songs; to Steve Goldfield for his work on the word processor; to Chris Glazek and Mabel Dennison, who helped prepare the revised manuscript for the word processor, and to Mary Lou Carlson for copy editing. Finally I would like to thank Frances Moore Lappé, who motivated me to work against hunger and who cofounded IFDP, where I was so touched and proud to become an intern in 1980.

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✋ = handout

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Introduction

Why the Food First Curriculum

A sampling of the daily mail at the Institute for Food and Development Policy often offers comments like these: "All the children's hunger activities I've tried leave my students feeling overwhelmed and helpless. The books of the Institute offer so much hope. Do you have any resources for children?" "I want my children to learn ways to work against hunger that go beyond charity. Do you have any suggestions I can share with their teachers?"

Ending hunger is a long, hard job. To build a more just and democratic food system requires knowing the facts. Children need to understand where their food comes from, how it gets to them, and who gets bypassed. They need to learn about people already working to end hunger.

In addition, children need to develop skills for working for democratic change—how to communicate with other people, to analyze situations, to solve problems cooperatively, and to organize workloads.

Because children learn best when they are enjoying themselves, I've worked to make the curriculum as experiential and interesting as possible. During the development of the Food First Curriculum, I've circulated drafts to educators around the country for review. Each activity has been classroom tested.

The responses have been inspiring. One teacher described the powerful effects on her students, particularly during the activity, "How Does the World Eat?" (IV/i): "They really took it seriously. Each one watched carefully to see how much food the others received. The 'hungry' ones asked to be served more food. The ones with adequate portions were outraged that one 'rich' person could keep so much. They demanded a fairer distribution."

Goals of this Curriculum

To enable students:

1. To think critically and independently about the world around them.
2. To be self-directed individuals capable of participating in shaping their world.
3. To develop an inquisitiveness about the world in general and our food system in particular.
4. To become aware of our food system—where food comes from, who produces it, who controls it, who is bypassed by it, and why.
5. To understand the roots of hunger.
6. To be aware of possible solutions to hunger and methods for bringing about change in the food system.
7. To practice forms of group problem solving and decision making.

Key Ideas

Unit I

- There can be more than one correct way to get some things done.
- Cooperation leads to problem solving.
- In this world there exists a rich diversity of ways of life. One can appreciate all of them.

Unit II

- The food we eat originates in places all around the world.
- The people who work on farms growing our food work very hard.
- The number of farms in the U.S. has been decreasing. The average size of farms in the U.S. has been increasing.

Unit III

- Most of the foods we eat follow a complicated path—from farmer to processor to distributor—before reaching our table.
- The extra steps food companies take to

process and sell food are not always beneficial for the consumer. Examples: additives, energy-intensive packaging, deceptive advertising.
- A small number of manufacturing companies control many of the brands of food.

Unit IV
- One out of four people on this earth suffers from hunger.
- Hunger is not caused by a scarcity of food or by too many people.
- People go hungry when they do not have access to land to grow food or to jobs so they can earn money to buy food.

Unit V
- Many people go hungry in the U.S.A.
- Some groups of Americans are more likely to go hungry than others--minorities, children, seniors, and women.
- Being unemployed or having a limited income makes it hard for people to buy enough food, even though they are hardworking, intelligent people.

Unit VI
- Ordinary people can make changes.
- Children, and others, can work on large problems by starting with themselves and their local areas.
- Charity will not end hunger (although it can ease the immediate suffering).
- Hunger can be ended by people working together to build a more just life for all.

Who this Curriculum Is For

I designed this curriculum for sixth grade children because I found a particular lack of good materials for the middle grades—crucial years during which children begin to integrate ideas and to form their own value systems, when they are curious and eager to learn.

Almost any activity, though, can be used for younger or older children. Often I give specific modifications for adapting an activity for younger students (fourth and fifth grades) and older students (seventh and eighth grades).

Much of the material is based on my own feelings on how to achieve an ideal learning situation. Since I was brought up in middle-class suburban neighborhoods, the activities may be slanted toward teaching in similar situations. To get the most from this curriculum, teachers will need to adapt the activities to their own special environments.

Though this curriculum is set up to become a part of daily classroom use in public and private schools, its usefulness is not limited to these environments. By using a shortened selection of activities, religious educators may find this curriculum to be a helpful addition to Sunday School classes. Activities in the last three units—Unit IV, "Why Are People Hungry?"; Unit V, "Who's Hungry in the USA?"; and Unit VI, "What Can We Do?"--would be especially appropriate for religious school classes.

Youth organizations, such as Scouting and 4-H, might also successfully incorporate a selection of activities into their programs. Unit II, "Where Does Our Food Come From?"; Unit III, "How Do We Get Our Food?"; and Unit VI, "What Can We Do?" would be the most appropriate areas. Individual activities can be used in workshops with a wide variety of groups of children. For example, community food activists could put on special educational events for young people using these activities, possibly in conjunction with other hunger awareness programs for older people. Unit IV, Activity 1, "How Does the World Eat?" would make a useful and involving workshop session.

How to Use this Curriculum

The Food First Curriculum is a complete social studies unit of 35 lessons (50 class hours) designed to be used once or twice a week throughout the school year.

The following rating system used throughout the curriculum may help in further organizing lesson plans:

- Key activities put across the most central concepts of the unit. They can be used when time is limited to one-day workshops or short courses.
- Important activities, when used with key activities, will provide a general understanding of the unit material. These are good for use in courses with some time limitations, religious school classes, and weekly events.
- Useful activities, when used with key

and important activities, will supplement and reinforce understanding of all unit concepts. These are suggested for classes that meet regularly throughout the year.

For those who have limited time for Food First activities, here is a suggested short course of ten activities:

1. Unit I: Activity Two. "If the World Were a Global Village"
2. Unit I: Activity Five. "We Can All Be Experts"
3. Unit II: Activity Four. "Where Have All the Farmers Gone?"
4. Unit III: Activity One. "Visit to a Supermarket"
5. Unit III: Activity Five. "Food Ads—What's in Them for Me?"
6. Unit IV: Activity One. "How Does the World Eat?"
7. Unit IV: Activity Three. "Voices from a Bangladesh Village"
8. Unit IV: Activity Five. "Puppets and Population"
9. Unit V: Activity Three. "Old and Hungry"
10. Unit VI: Activity Two. "What Does Change Mean?"

In addition, I strongly suggest the use of **journals** to help children digest newly learned ideas and to help teachers evaluate children's progress. At the beginning of the course, have the children prepare a looseleaf binder, notebook, or a file folder to store their work on food and hunger. Journals are also a good place for recording thoughts and feelings about each activity.

For a good background in the roots of hunger, I suggest reading **World Hunger: Ten Myths** by Frances Moore Lappé and Joseph Collins, available from the Institute for Food and Development Policy (see end of Curriculum for order information).

Teaching Related Areas

This curriculum focuses on the social science aspects of the food system, an area where I saw a great void in available educational resources. Optimally, this handbook should be used following a **nutrition** unit so that there is a strong understanding of the connection between proper eating and good health.

The Center for Science in the Public Interest (1755 "S" Street, N.W., Washington, DC 20009) has a wide variety of materials on nutrition. Their **Food Scorecard** is an excellent booklet on the subject written from a school child's perspective for nine to thirteen year olds.

Integrating **school gardening** into the curriculum will also enhance it. Most children live a life that is very far removed from the origins of their food. Growing food will put them in touch with this vital resource. Suggested resources are **A Basic Curriculum Guide for School Gardens** by Diane L. Peterson (Pleasant Hill, Calif.: Cooperative Extension of Contra Costa County (1700 Oak Park Boulevard, 94523) and **Gardening with Children: A Guide for Parents and Teachers** by Thom and Patty Dunks (Santa Cruz, Calif.: Harvest Press, 1976).

For additional resources, see the annotated bibliography at the end of this curriculum.

Using and Integrated Curriculum

by Rhea Irvine, Berkwood Hedge School, Berkeley, California

Because the **Food First Curriculum** takes a multidisciplinary approach to our food system, there are extensive possibilities for integrating language arts, science, and math. An integrated curriculum allows students to apply skills while immersed in the study of a topic. Students gain an appreciation of skills not possible through an out-of-context textbook. Children remember and relate concepts because they use them to understand and communicate ideas and information which have significance for them. Because the **Food First Curriculum** provides a context that children find compelling and motivating, it is an ideal vehicle for teachers who wish to attempt an integrated curriculum for the first time, or for those who wish to refine this powerful teaching technique.

Built into the **Food First Curriculum** lessons are these language arts experiences:

- Interviewing
- Journal keeping
- New vocabulary
- Poetry
- Puppetry
- Letter writing
- Debating
- Role-playing
- Oral history
- Panel discussion
- Research
- Reporting
- Questionnaires

Social studies and science units which can be developed to expand on Food First topics include:

- Map reading
- Advertising
- Nutrition
- Energy use
- Recycling
- Consumer skills
- Plant genetics
- World geography
- Natural resources
- Decision making
- Current events

Opportunities to apply math concepts appear in discussions of such topics as infant mortality, population density, protein, and distribution of resources. Students can put to use:

- Fractions
- Percentages
- Statistics
- Graphing
- Charts and tables
- Averages
- Big numbers
- Brainstorming
- Problem solving

A Supportive Classroom

I have always learned the most from those who had the highest expectations of my ability to improve. The more responsibility actively delegated to me, the more I worked to produce high-quality results. The teachers I remember now are those special few who stepped away from the rigid role of fact givers. They allowed us as students to explore new ways of thinking. For this reason, I believe in the importance of promoting democracy and independent thinking in the classroom.

To prepare a classroom atmosphere supportive of children learning to participate in the shaping of the world, I strongly recommend reading Chapter Two, "An Idea Grows," and Chapter Four, "Getting Started," from Prutzman et al.'s **The Friendly Classroom for a Small Planet** (Wayne, N.J.: Avery Publishing Group., 1978; available from CCRCP, Box 271, Nyack, NY 10960); along with "Peace and Justice in Schools: Mutual Education" from McGinnis and McGinnis' **Educating for Peace and Justice** (St. Louis, Mo.: Institute for Peace and Justice—2913 Locust, 63104—1980).

Some characteristics of a supportive classroom include the promotion of individual dignity and self-worth, an emphasis on cooperation and sharing, creative conflict resolution inside and outside the classroom, and mutual education—a process involving the democratic participation by students and teachers alike.

Feeling positively about oneself is a prerequisite to feeling positively about others and seeing other points of view. Conscious affirmation of every individual in the group is one tool in developing strong self-concepts and allowing caring to be communicated. Though affirmation is practiced in Unit VI, Activity 7, "Affirming Each Other's Efforts for Change," teachers may want to introduce it earlier in the curriculum by periodically setting aside time for all persons to talk about a nice thing that they witnessed or learned recently that is somehow related to our food system.

Participating actively in the classroom teaches young people to participate in other areas of life. Because it is important to give every individual a chance to be listened to respectfully by other classmates, I recommend the use of a circle structure. Circles show the equality of every person more eloquently than any verbal lessons on equality can.

One of the most important aims of mutual education is mutual responsibility, the sharing of decision making. Children who feel they have some control over their learning situation will contribute much more fully to and gather much more knowledge from their education.

To achieve mutual responsibility, it helps if the teacher views himself or herself as a facilitator of group learning rather than as simply a presenter of lessons. The facilitator keeps things moving in the classroom, balances the needs of individuals with the needs of the whole group, checks how the group feels about planned activities, and helps to modify the plans as needed to make the whole group comfortable.

Mutual decision making often utilizes the consensus process, a method in which an entire group tries to come to an agreement. This differs from voting. Voting involves choosing from among alternatives. Consensus synthesizes the viewpoints of all persons to arrive at a final decision acceptable to everyone.

Answer key to pretest/posttest (page 5): 1) yes; 2) 1 out of 4; 3) yes; 4) all over the U.S. or around the world; 5) fewer farmers today; 6) 75%; 7) Native Americans, women, people over 70 years old, people 1 to 15 years old; 8) fewer people deciding; 9) yes; 10) ordinary people.

Food First Curriculum Pretest/Posttest

1. Is there enough food grown in the world today to feed all the people?
____ Yes ____ No

2. How many people go hungry in this world?
____ Everyone (100%) ____ 1 out of 100 persons (1%)
____ 1 out of 4 persons (25%) ____ No one (0%)
____ 1 out of 10 persons (10%)

3. Can there be more than one correct way to describe an event?
____ Yes ____ No

4. Think about the food you ate yesterday. Where was it grown?
____ Your neighborhood
____ Your state (including your neighborhood)
____ All over the United States (including your state)
____ Around the world (including the United States)

5. Compare the number of farmers in the United States now with the number of farmers 100 years ago. Are there:
____ More farmers today
____ The same number of farmers today
____ Fewer farmers today

6. Many types of food we find in the supermarket are made by the same few food manufacturing companies. What percentage of all the breakfast cereals, all the canned soups, and all the packaged cookies are made by just one to four food companies?
____ 100% ____ 75% ____ 50% ____ 25% ____ 0%

7. Which people in the United States are more likely to be hungry? Check one of each pair below.
____ People of European ancestry or ____ Native Americans
____ Men or ____ women
____ People over 70 years old or ____ people 30 to 40 years old
____ People 1 to 15 years old or ____ people 20 to 30 years old

8. There are many more people in the world today than there were 100 years ago. Compare the number of people now deciding what food will be grown and for whose benefit to the number of people deciding this 100 years ago. Are there:
____ More people deciding
____ The same number of people deciding
____ Fewer people deciding

9. Is it possible to make changes in this world?
____ Yes ____ No

10. In the task of working to end hunger, what group of people is most important?
____ Scientists ____ Farmers
____ Ordinary people like you or me ____ Businesspeople

Note to teacher: see page 4 for answer key.

UNIT I INTRODUCTION

Why Do People Around the World Do Things in So Many Different Ways?

This unit adds a global perspective to the curriculum as well as providing students with a deeper understanding and acceptance of people's differences. It allows them to practice new types of social skills by learning creative methods of group problem solving. Groups that utilize these lessons will benefit from a much richer experience throughout the rest of this curriculum.

The teacher can use this opportunity to develop students' awareness and knowledge of different cultures and geography. Lessons in this unit also enhance mathematics, reading, vocabulary, language arts, and oral communications skills.

UNIT GOALS

1. To help children appreciate the diversity of ways of life on this globe.
2. To create an awareness that there are many different ways to work out problems and to look at situations.
3. To enable children to practice group problem-solving skills.
4. To enhance children's abilities to critically assess situations with an open mind.

Activity One

"Food—First Impressions" is a quick and easy useful activity that introduces children to food issues. They will gain vocabulary and communication skills by discussing their first impressions of words related to the food system.

Activity Two

"If the World Were a Global Village" is an important simulation exercise that demonstrates global inequalities in access to and control over resources. It will increase geographic knowledge and develop understanding of the differences found in countries around the world.

Activity Three

"There's More than One Way to Look at Something" is a key activity that prepares children for considering controversial issues. Reading comprehension and analytical thinking will be improved as students study essays on several subjects written from opposing viewpoints.

Activity Four

"Cooperation Squares Game" is an important and enjoyable activity that gives children a chance to practice the skills needed for cooperation. In addition, the game serves as a springboard to thinking about and trying to understand one's actions.

Activity Five

"We Can All Be Experts" is another key activity in this unit. By looking at how differently things are done in other lands, students will come to appreciate other cultures and to understand that there is not just one right way to get tasks done.

Activity Six

"Global Quiz Game" is a useful wrap-up of Unit I. The quiz game provides an enjoyable way for children to review the important concepts and global perspectives taught in this unit.

Options

For more creativity and variety in your classroom you may want to add one or more of the following activities:

1. **Global Poetry**—Have students read poems written by people of other lands. Discuss the country the poem comes from, what it means, who wrote it, and how it compares to the other poems. Ask children to write their own original poems about our similarities to and differences from people around the world.

2. **How Should We Decide?**—If you are familiar with consensus decision making, you may want to have your group practice making decisions this way. Choose a topic that affects the lives of the children such as playground rules, classroom chores, or plans for an upcoming holiday. Try making a group decision on a particular topic in other ways. Examples: authoritarianism—one person decides; majority rule—a 51 percent share of the vote decides; consensus—everyone agrees.

Some of the main differences between consensus and voting are: (1) Consensus puts together many proposals to form one best one while voting requires persons to choose from among many proposals. (2) Consensus groups try to reach a decision that every person feels comfortable with while voting groups try to reach a decision that at least 51 percent of the people are comfortable with. (3) When deciding matters of personal importance, consensus can take a long time and be difficult to achieve.

3. **Flowers Are Red**—Have children sing the following song about education written by Harry Chapin. The song celebrates creativity and the ability to look at life from many perspectives. For the complete lyrics, see the dedication, pp. iii-iv.

THE ARITHMETIC OF POVERTY
(from India)

Decide mother,
who goes without.
Is it Rama, the strongest
or Baca, the weakest
who may not need it much longer
or perhaps Sita?
Who may be expendable.

Decide, mother,
kill a part
of yourself
as you resolve the dilemma.

Decide, mother
decide ...
and hate.

Reprinted from the Presidential Commission Report on World Hunger, **Overcoming Hunger: The Challenge Ahead** (Washington, D.C.: U.S. Government Printing Office, 1980).

DING DONG,
LITTLE BELLS OF ST. JOHN
(from Ecuador)

Ding dong,
Little Bells of St. John.
The rich eat cheese and bread
And those who need
They get none.
Ding dong,
How will they be fed?

Ding dong,
The little bells cry.
The rich eat cheese and bread
And all the rest
They will die.
Ding dong,
Who will bury the dead?

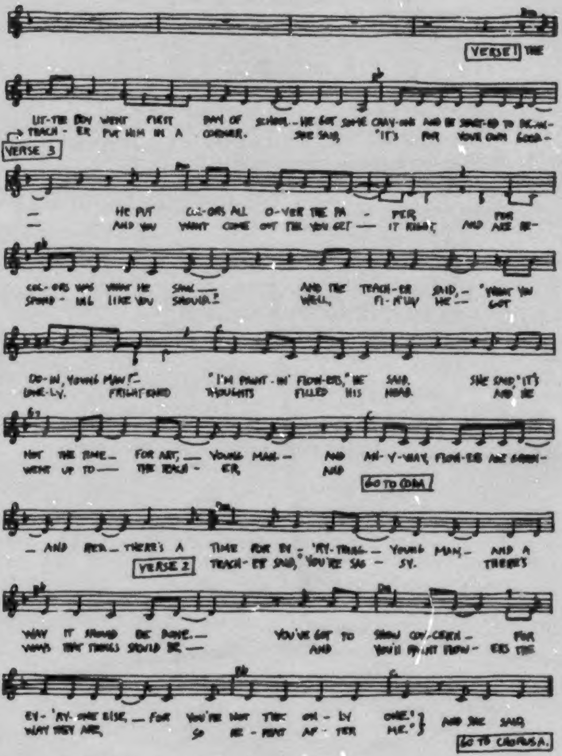
Reprinted from William I. Kaufman, **UNICEF Book of Children's Poems** (Harrisburg, Pa.: Stackpole Books, 1970), used by permission.

FLOWERS ARE RED

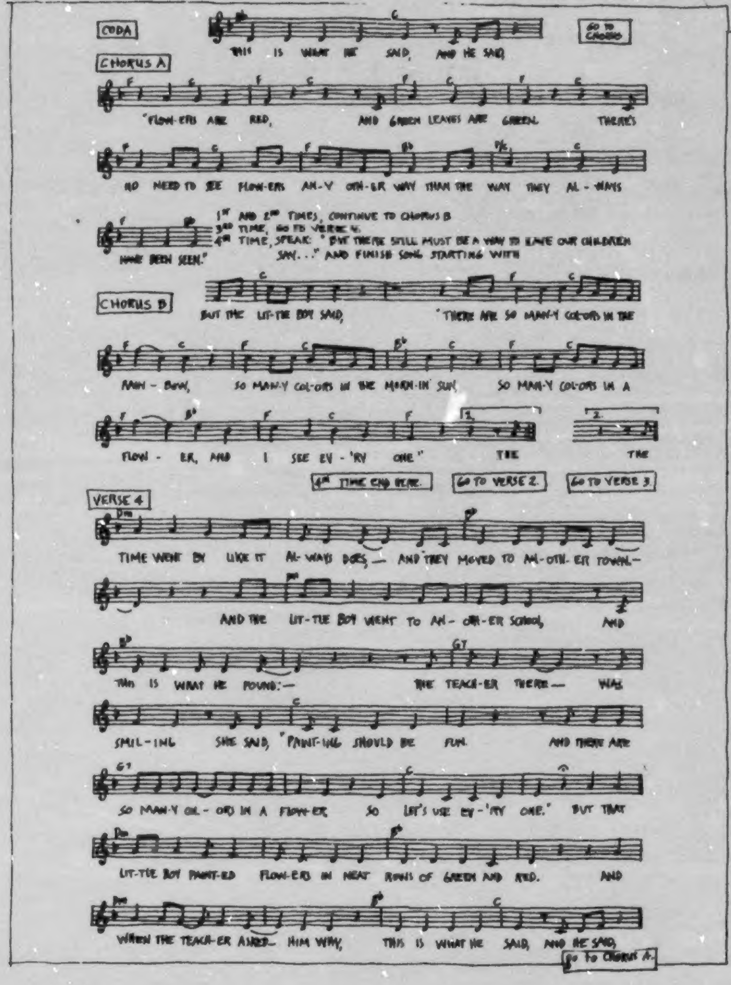
SPECIALLY ADAPTED FOR USE IN THE
FOOD FIRST CURRICULUM

WORDS AND MUSIC BY HARRY CHAPIN
COPYRIGHT CHAPIN MUSIC 1978

TO THE TEACHER: THE STANZAS PROCEED AS FOLLOWS:
VERSE 1, CHORUS A AND B (1ST ENDING)
VERSE 2, CHORUS A AND B (2ND ENDING)
VERSE 3, CODA, CHORUS A ONLY (SLOWER)
VERSE 4, CHORUS A, SPOKEN LINE, CHORUS B


VERSE 1 THE
LIT-TLE BOY WENT FIRST DAY OF SCHOOL.— HE GOT SOME CRAY-ONS AND HE START-ED TO DRAW—
TEACH - ER PUT HIM IN A CORNER. SHE SAID, "IT'S FOR YOUR OWN GOOD—
VERSE 3
— HE PUT COL-ORS ALL O-VER THE PA - PER, FOR
— AND YOU WON'T COME OUT TILL YOU GET — IT RIGHT, AND ARE RE-
COL-ORS WAS WHAT HE SAW.— AND THE TEACH-ER SAID,— "WHAT YOU
SPOND - ING LIKE YOU SHOULD."— WELL, FI-N'LLY HE — GOT
DO-IN, YOUNG MAN?"— "I'M PAINT-IN' FLOW-ERS," HE SAID. SHE SAID, "IT'S
LONE-LY. FRIGHTENED THOUGHTS FILLED HIS HEAD. AND HE
NOT THE TIME— FOR ART,— YOUNG MAN.— AND AN-Y-WAY, FLOW-ERS ARE GREEN—
WENT UP TO— THE TEACH - ER, AND
GO TO CODA
— AND RED— THERE'S A TIME FOR EV-'RY-THING.— YOUNG MAN,— AND A
VERSE 2
TEACH-ER SAID, "YOU'RE SAS - SY. THERE'S
WAY IT SHOULD BE DONE.— YOU'VE GOT TO SHOW CON-CERN— FOR
WAYS THAT THINGS SHOULD BE — AND YOU'LL PAINT FLOW- ERS THE
EV-'RY-ONE ELSE,— FOR YOU'RE NOT THE ON - LY ONE."} AND SHE SAID,
WAY THEY ARE, SO RE - PEAT AF - TER ME."}
GO TO CHORUS A.

*Complete lyrics on page iv.


CODA
THIS IS WHAT HE SAID, AND HE SAID,
GO TO CHORUS
CHORUS A
"FLOW-ERS ARE RED, AND GREEN LEAVES ARE GREEN. THERE'S
NO NEED TO SEE FLOW-ERS AN-Y OTH-ER WAY THAN THE WAY THEY AL - WAYS
HAVE BEEN SEEN."
1ST AND 2ND TIMES, CONTINUE TO CHORUS B
3RD TIME, GO TO VERSE 4.
4TH TIME, SPEAK: "BUT THERE STILL MUST BE A WAY TO HAVE OUR CHILDREN SAY..." AND FINISH SONG STARTING WITH
CHORUS B
BUT THE LIT-TLE BOY SAID, "THERE ARE SO MAN-Y COL-ORS IN THE
RAIN - BOW, SO MAN-Y COL-ORS IN THE MORN-IN' SUN, SO MAN-Y COL-ORS IN A
FLOW - ER, AND I SEE EV - 'RY ONE." THE THE
1.
2.
4TH TIME END HERE.
GO TO VERSE 2.
GO TO VERSE 3.
VERSE 4
TIME WENT BY LIKE IT AL-WAYS DOES, — AND THEY MOVED TO AN-OTH-ER TOWN —
AND THE LIT-TLE BOY WENT TO AN - OTH-ER SCHOOL, AND
THIS IS WHAT HE FOUND: — THE TEACH-ER THERE — WAS
SMIL-ING SHE SAID, "PAINT-ING SHOULD BE FUN. AND THERE ARE
SO MAN-Y COL - ORS IN A FLOW-ER SO LET'S USE EV-'RY ONE." BUT THAT
LIT-TLE BOY PAINT-ED FLOW-ERS IN NEAT ROWS OF GREEN AND RED. AND
WHEN THE TEACH-ER ASKED — HIM WHY, THIS IS WHAT HE SAID, AND HE SAID,
GO TO CHORUS A.

ACTIVITY ONE

Food: First Impressions

★ useful

Description
The children will respond to words about food with the first thoughts that come to their minds and will list their ideas on what makes up the system that brings them their food.

Related Subjects
Social Studies, Vocabulary, Nutrition, Geography, Science.

Objectives
1. To begin to think about concepts related to hunger and the food system.
2. To demonstrate how much is already known about food.
3. To acquire new vocabulary words associated with food and agriculture.
4. To appreciate the wide variety of impressions people have and to accept that these are not necessarily "right" or "wrong."

Materials
Blackboard and chalk, butcher paper and marking pen, pencils, paper, and list of words.

Procedure

1. Explain to the group that they will be asked to give the first idea that comes to their minds when seeing a word written on the board. They are not expected to know the meanings of all the words. Stress that there are no right or wrong answers. Distribute writing materials if needed.

2. Either the teacher or a selected student should have the list of food words. Write the words on the board one at a time. You may want to have everyone silently write down reactions to each word before anyone gives a verbal response. Let one child respond out loud to each word. Go around the room so that everyone has a turn at at least one word.

Word examples: food, hamburger, rice, Pepsi, black beans, Hostess Twinkies, tortillas, hunger, Hershey, poverty, rich, wheat, farmworkers, corn, food stamps, prime rib, Safeway (or other large supermarket chain), tractor, bananas, hoe, Dole, Frosted Flakes, farmer, debt, peasant, cocoa, China, harvest, profits, co-op, seeds, water, land, commercials.

3. Discuss the responses after each word association.

4. Now ask the children to think about the system that brings food to them. Have them list steps that are related to food while one child writes all of these on the butcher paper. When all the ideas are listed, connect them with lines, showing the sequence of steps of the food system.

Examples of steps: selling seeds, cultivating crops, canning vegetables, milling flour, transporting food to the food store, shopping for food.

Note: Save this food system diagram for discussion in Unit III, Activity 6, "What Path Did My Food Take?"

5. Administer the pretest found on page 5. Emphasize that this is a survey and not a "test." Students are not expected to know the "correct" answers. Save the results for evaluation at the end of the Food First Curriculum.

Modifications

For **groups not knowing each other**, have them divide into pairs of children who do not know each other. Ask each child to interview his or her partner asking questions such as: "What is your favorite food?" or "Do you know someone who has gone hungry?"

For **younger** students, omit step 4.

For **older** students, add these words to the list of word examples: legume, caviar, export crop, food additive, agribusiness, money lender, fertilizer, pesticide, organic, competition.

ACTIVITY TWO

★ ★ important

If the World Were a Global Village

Description
Students will participate in a simulation showing differences and inequalities in the use of and control over global resources and will make charts showing the proportions of people with access to certain resources.

Related Subjects
Geography, Math, Art, Social Studies.

Objectives
1. To appreciate the global inequalities in control over and use of resources.
2. To understand differences and similarities in ways of life in other places around the world.
3. To practice putting information into a chart format.

Materials
3" x 5" information cards with names and/or pictures of the resource being discussed (one for each recipient in each part of the activity), paper, pencils, colored pencils, pens.

Procedure
1. In advance, prepare a list of resources and the percentage of world population that has access to each resource. Determine how many persons in your group will make up each percentage. Make enough information cards—with names and/or pictures of the resource—for all children who will represent the global users of each resource. Resource use examples may be found at the end of this activity (use a-i for grade 6).

Optional—You may want the children to help in the preparatory stage by making the cards, writing the correct phrase, and drawing a simple illustration on each one.

2. Explain to the group that members will be taking part in a simulation to show how global resources are used. Explain that a resource is a supply of something. Discuss the children's concepts of the most important resources needed for human life.

3. For each resource, one at a time, randomly divide the group into "haves" and "have-nots." Ask the haves to move to a separate part of the room. Distribute the cards to them. Read the statistic aloud.

4. Discuss the resource, its importance to human life, the degree of inequality in its use, what it would be like to have the resource, what it would be like to go without the resource, and why everyone in the world does not have the resource.

5. Repeat Steps 3 and 4 for resource statistics through (i).

6. Journals—Allow time for the children to place their charts in their journals and to make entries on their thoughts and feelings about global inequalities in resource use.

Optional—As a follow-up, ask each person to draw a circle graph for one or more of the resources showing the haves and the have-nots.

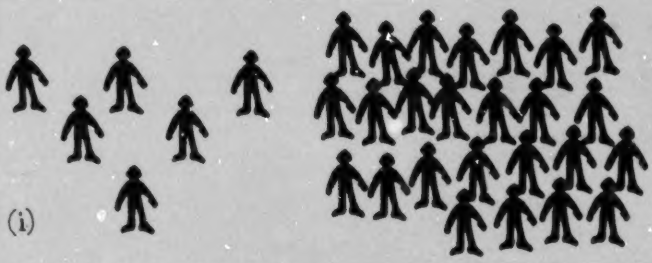
Modifications

For younger students, have them use rubber stamps or stencils of people to make posters showing each resource use example. Use a different color ink for the haves and the have-nots.

For older students, add resource use examples j, k, and l.

Resource Use Examples

If the world were a global village of 100 persons:



(a) 30 would know how to read (in a group of 25, 8).

(b) 20 would never even go to one day of school (in a group of 25, 5).

(c) 1 would get to go to college (less than 1).

(d) 20 would live in sturdy, safe homes (5).

(e) 50 would have all the food they needed to eat (12).

(f) 3 would own or control almost all (80 percent) of the land for growing food. (Less than 1 person would have 3/4 of the space; 24+ persons would have 1/4 of the space.)

(g) 6 would be Americans (2).

(h) 25 would be Chinese (6).

(i) The 6 Americans would use the same amount of energy just for air conditioning in the summer (not including transportation, heating, industry, agriculture, and other uses of energy) as all 25 of the Chinese would for every energy use in their country (2, 6).

(j) The 6 Americans would use more than 1/3 (40 percent) of all the energy and minerals in the world. The other 94 would use less than 2/3 (60 percent) of all the energy and mined minerals in the world (2, 23).

(k) 30 would eat an average of 2,000 pounds of grain per year—mostly in meat (total = 60,000 lb.)* (8).

(l) 70 would eat an average of 400 pounds of grain per year (total = 28,000 lb.)* (17).

* Explanation: Cattle eat much of the world's grain supply. Most of the world's inhabitants cannot afford to buy beef from cattle. Those who do eat beef use up much more grain.

ACTIVITY THREE ★ ★ ☆ key

There's More than One Way to Look at Something

Description
Students will read and discuss pairs of essays presenting varying interpretations of the same situation.

Related Subjects
Reading, Language Arts, Vocabulary.

Objectives
1. To appreciate that there are many different ways to look at a situation and to learn how differently one event can be interpreted by different authors.
2. To develop critical thinking skills and to appreciate the importance of determining the source of a written article.
3. To improve reading comprehension.
4. To practice writing a comparative analysis.

Materials
Paper, pencils or pens, and copies of the handout at the end of this activity. Teacher may also provide other pairs of written descriptions from opposite perspectives of several events or policies—enough copies of each for everyone. Possibilities: Nuclear disarmament (hawk and dove perspectives), the Equal Rights Amendment (supporters and opponents), the death penalty (supporters and opponents), apartheid (South African government and black African perspectives).

Procedure
1. Ask the children to be prepared to compare several interpretations of the same event. Distribute copies of the handout, paper, and pencils or pens.

2. Begin by reading and discussing the first example concerning a nighttime automobile encounter. How do the reports differ? Sample questions are found at the bottom of the handout.

3. Ask the group to read Examples 2 and 3 in the handout either silently or by taking turns reading aloud. Discuss.

4. Optional—Repeat with descriptions of one or more other events.

5. Ask each child to choose one pair of essays and to write one or two paragraphs comparing the two viewpoints.

6. When the essays are finished, have the group share some or all of the essays with each other. Discuss. Also, ask for examples of other issues that can be looked at in different ways.

7. Journals—Provide time for children to place their essays in their journals and make entries about appreciating many perspectives.

Modifications
For younger students, give the group a chance to practice observing a situation and then describing it. Present a situation to the group (these can range from a television episode, photographs, drawings, slides, tapes, skits to machines or sculpture). Ask three children to leave the room. One by one have them enter and describe the situation to the group in their own words. Afterwards

discuss why different people can have different interpretations of the same event.

For older students, have students read the original essays instead of the paraphrased ones.

Original sources for points of view given in the handout:

Examples (1) A and B are from **African Studies Handbook for Teachers**, 2nd ed. (Worcester, Mass: Worcester Teaching Corp./University of Massachusetts, 1971). Reprinted by permission.

Examples (2) A and B as given on the worksheet have been paraphrased specially for the **Food First Curriculum.** The original sources: (A) a letter from the U.S. Dept. of Agriculture to author, January 6, 1982:

"You wanted information on the reasons for reducing the Food Stamp Program budget. The Reagan Administration is committed to reducing the level of growth in Federal expenditures, to improving the current economic conditions and to controlling inflation in this country. Food stamp laws that have been passed by this Administration will curtail fraud, waste and abuse in the Program and will save Federal funds."

(B) from Action (March 13, 1981), a newsletter from **IMPACT**, an interreligious nonprofit group based in Washington, D.C. Reprinted by permission:

"The Food Stamp Program serves over 22 million persons. As unemployment and inflation rise, so does the need for the program. The recipients—mostly mothers with small children, the elderly, and the working poor—rely heavily on food stamps to meet their basic nutritional needs.

Proposed cuts would lower average benefits from 43 cents to 38 cents per meal. This loss of an eighth of a family's food assistance, coupled with inflation, would make a significant difference in an already inadequate diet. Maintaining the program at current levels is essential to millions of Americans."

Examples (3) A and B have been paraphrased for sixth-grade reading level. The original sources: (A) an advertisement in **Business Week** (June 29, 1981). Reprinted by permission:

"The Philippines has come a long way in the last decade. As S. Shahid Husain, World Bank Regional Vice-President for East Asia and the Pacific, told the press last January, the country's development record 'is one of the most impressive in the developing world.' ... Between 1972 and 1980, Philippine agricultural output gained an average 5 percent annually—one of the highest rates in the developing world.

The country has had remarkable success in other areas as well. The Philippines is now self-sufficient in rice, its staple crop.... Gerardo Sicat, Minister for the National Economic and Development Authority, ... adds, 'All our development programs are designed to lift up the poor, to enable them to participate fully in our country's growth.'"

(B) Walden Bello, "Rural Debacle: The World Bank and the Philippines," in **Food Monitor** (July/August 1981), available from World Hunger Year, Inc., 350 Broadway, Suite 209, New York, NY 10013. Reprinted by permission:

"The World Bank's fears were compounded by the results of a study done by a high-powered 'Poverty Mission' to the Philippines in 1979. According to the mission, in spite of the increasing application of modern technological inputs to agriculture and a real growth rate of 5 percent a year in agricultural output, the number of rural families living in absolute poverty grew by 23.1 percent between 1971 and 1975....

The study suggested ... most of the benefits from these investments were being reaped by large commercial operators producing export crops such as sugar, coconut, and pineapple.... 'One could argue therefore that the benefits from the high level of agricultural growth ... may not have reached the poor.'"

There's More than One Way to Look at Something

Example (1) "An Automobile Encounter" — (for discussion).

A

One night last summer I was walking in a rough part of town. It was late and no one was around. A taxi came up from behind and so startled me that I tripped on a broken bottle getting out of its way. I picked up the bottle and was looking for somewhere to put it when I noticed that the taxi had stopped a hundred yards ahead. Suddenly three doors of the taxi and four kids in leather jackets jumped out and started running towards me. I looked quickly in all directions to see where I could run but the houses were too close together and there were no lights anywhere. I only had a moment to think what to do. As they came close I ... and they ... and then I ...

B

One night last summer Jack, Ray, Dick and I were coming home late from the show. I knew my mom would already be worried so I suggested taking a taxi to get home quicker. After we got in I went through my pockets and realized that I had spent all my money and I remembered that the other guys had spent all theirs. I nudged Jack in front and then Dick next to me and gave each of them the sign and told Dick to nudge Ray. About three blocks from my house we turned the corner real fast and there was this crazy guy, or maybe he was drunk, standing in the middle of the road and we almost hit him. This got the driver real mad and we knew he wasn't thinking much about us. I said, "Right here, please," and he stopped suddenly. We opened the doors and ran as fast as we could back in the other direction. We figured if he tried to chase us we'd just split up at the corner. But before we got there we had a surprise waiting for us. The crazy guy was standing in the middle of the street, just waiting for us. As we got closer we saw the danger. He had a broken bottle in his hand, and we knew by his face that he meant business. As we got closer he ... and we ... and then he ...

Example (2) "The Food Stamp Program"

A

U.S. Department of Agriculture:

You wanted information on the reasons for reducing the Food Stamp Program budget. The Reagan administration is working to lower government spending, improve the economy, and control rising prices in this country. Food stamp laws that have been passed by this administration will end fraud, waste, and abuse in the Food Stamp Program and will save government money.

B

IMPACT, an interreligious nonprofit group:

The Food Stamp Program serves over 22 million persons. As unemployment and inflation rise, the program is needed more. People who receive food stamps are mostly women with small children, old people, and poor working people. They rely heavily on food stamps to meet their basic food needs.

The government plan cuts food stamp benefits from 43 to 38 cents per meal. This would make a big difference in the diet of people who already cannot afford to buy enough food. Millions of Americans need food stamp benefits to stay at the same level.

Example (3) "Development in the Philippines"

A

An advertisement in **Business Week**, a businesspeople's magazine:

The Philippines has come a long way in the last decade. A World Bank expert said it is one of the most impressive countries in the developing world. Between 1972 and 1980 Philippine agriculture grew more than most countries in the developing world.

The Philippines now does not have to buy rice from other countries. Rice is the food of the country. A minister in the Philippine government said that all his government's development plans are designed to help the poor share in his country's growth.

B

An article in **Food Monitor**, a magazine for people concerned about food, land, and hunger:

A study of poverty in the Philippines found that the number of families living in poverty grew between 1971 and 1975, even though more food was grown at the same time.

The study found that most of the help to farmers from government programs went to rich farmers who grew export crops such as sugar, coconut, and pineapple. The benefits from growing more food may not have helped the poor.

Choose example (2) or (3) and answer these questions:

1. How are these two statements different?

2. Who wrote each one?

3. Where was each one printed?

4. How can there be two views of the same idea?

5. When you read something, why is it important to know who wrote it and where it was printed?

6. Why is it important to look at more than one opinion before you make your own decision about something?

7. Choose one of the examples and write one or two paragraphs comparing the two viewpoints.

ACTIVITY FOUR ★ ★ important

Cooperation Squares Game

Description
Students will work together in teams to put together a puzzle that can only be solved cooperatively.

Related Subjects
Communication, Problem Solving.

Objectives
1. To practice cooperation and develop social skills for helping others.
2. To develop an appreciation for the usefulness of cooperation.
3. To use comparative thinking skills to contrast the differences between competition and cooperation.
4. To begin to think about and analyze personal actions and feelings.

Materials
A rules sheet and a set of squares for each group of five persons.

Procedure
1. Before class, prepare a set of squares and an instruction sheet for each five students. A puzzle set consists of five envelopes containing pieces of stiff paper cut into patterns that will form 6" x 6" squares, as shown in the diagram. Several individual combinations will be possible but only one total combination. Cut each square into the parts a through j and lightly pencil in the letters.

2. Then mark the envelopes A through E and distribute the pieces thus:

Envelope A — i, h, e
B — a, a, a, c
C — a, j
D — d, f
E — g, b, f, c

3. Erase the small letters and write instead the envelope letter A through E, so that the pieces can be easily returned for reuse. By using multiples of three inches, several combinations will form one or two squares. Only one combination will form five 6" x 6" squares.

4. Make a rules sheet such as:

> **Object of the game:** To form five squares of equal size.
> **Rules:** (1) No member may speak or communicate in any way by smiles, glances, hand signals; (2) No member may ask for a card or signal in any way that s/he wants one; (3) Members may give puzzle pieces to others.

5. Before distributing the envelopes, ask the group what cooperation means. List on the board the requirements for cooperation. For example: everyone has to understand the problem; everyone has to believe that s/he can help; everyone needs to think of other persons as well as him/herself.

6. Divide the group into teams of five and seat each team at a table with a rules sheet. Those persons left over can be appointed as observers and asked to take notes on the teams' interactions.

7. Explain that the puzzle can only be solved by cooperation. Read the object of the game. Explain the rules. Distribute the envelopes. Ask the group to begin.

8. When the game is over, review the ideas about cooperation from before the game. Discuss the following:

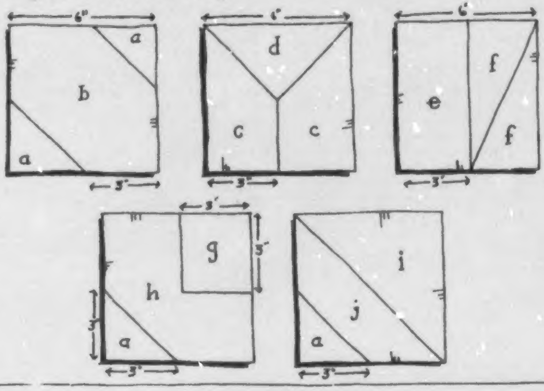
- How did you feel while playing the game? Did you have any problems in completing the game? If so, how did you solve them?
- How did you feel when someone held a piece and did not see the solution as you saw it? If you were that person, how did you feel?
- What was your reaction when someone finished his/her square and then sat back without seeing whether this solution prevented others from solving the problem?
- What were your feelings if you finished your square and then began to realize that you would have to break it up and give away a piece?
- Did you learn anything about yourself from this game? What sorts of things?
- Often there will be a person in the group who begins to grab pieces from other members, either to keep or redistribute. If this happened, how did the group react? Why did that person act the way s/he did? (While this behavior is contrary to the rules, the teacher may choose to let the group handle it or may intervene and say, "Members may only GIVE cards to others!")

9. Ask the group to compare cooperation with the process of competition used in most games. To do this you may want to set up another round of the Squares Game changing the rules to make it competitive. For example, the winner could be the first person to complete one square. Persons could be allowed to take pieces from each other.

10. Ask the children to each write one or two paragraphs on the difference between cooperation and competition.

11. Journals—Ask each child to make a journal entry on what was learned about cooperation.

Note: This lesson has been adapted from An Experiment in Cooperation: Cooperation Squares Game, © 1970 by NTL Institute.



ACTIVITY FIVE ★ ★ ★ key

We Can All Be Experts

Description

The children will each receive information on one or more aspects of global affairs and will help each other to fill out a questionnaire requiring the information of all.

Note: The important part of this activity is to show that differences exist around the world. It is not necessary for the children to memorize facts about other countries.

Related Subjects

Nutrition, Health, Reading, Oral Communication, Writing/Language Arts, Geography, Science.

Objectives

1. To develop an appreciation for customs in other lands.
2. To understand that our way of doing things is not always the most sensible way for other people in other places.
3. To practice cooperation and realize how collaboration helps to get work done.
4. To increase geographic awareness of where countries are on the map.
5. To improve analytical thinking.
6. Optional—To gain research skills.

Materials

A questionnaire for every child, one or more 4" x 6" expert cards with information for the answer to one question for each child, pencils or pens, paper, world map, and optional reference materials, such as books and magazines, for the children to research the questions and answers about ways of doing things in other lands.

Procedure

1. Optional—In advance, in addition to or as a substitute for the questionnaire and expert cards provided, you may want to have the children help prepare the questions and answers. Explain the types of information needed. Give examples of questions and answers, such as the ones provided at the end of this activity. Ask each child to create several question/answer pairs. Provide the reference materials. Assist with the researching as needed. Then prepare the expert cards and questionnaires. See step 3 to determine how many duplicates of each card are necessary.

2. Explain to students that they will be responsible for collaborating on a research project. You may want to increase the role-playing facet of this activity by calling this a "world research conference." Each child will be an "expert" on one or more topics of global affairs. Together they will be responsible for helping each other complete a copy of the research questionnaire. Have volunteers find each country that will be discussed on the world map.

3. You will probably want to break the group into teams of six to eight persons. If the group works well together, however, you may want to let them try to work on the questionnaires in one large group.

If you plan to divide the group into teams, you will need to make duplicates of the expert cards, one for each team. Most teams will need the supervision of an older person. Depending on the size of your group and the number of helpers available, you may need to run this activity at the same time that some children are working individually. For example, they could be writing essays for Activity Three "There's More than One Way to Look at Something."

4. Pass out questionnaires to each student in each team. Pass out one to three expert cards to each person. You may want to organize this so that each person has answers that are related to each other, either by subject area or by geographic region. Pass out writing materials as needed. Ask each child to fill out the questionnaire by using the advice of the other "experts." Allow the teams (or the big group) to decide on the process. They may choose to go around individually, to work together in one group, or to use some other process.

5. When all the teams are finished, bring the group back together. Go over the questions and answers.

6. Discuss the process—how it felt to work together and to be responsible for helping each other and how the group might have worked more effectively. Also, discuss the answers—what were the reactions to the information, which of the differences sounded better than life in this country, which sounded worse (and why), what are some other differences that were not mentioned, and what do other countries have in common with the United States.

7. Journals—Provide time for children to put their questionnaires into their journals and to make entries about how it felt to collaborate and what was learned about ways of life in other lands.

Modifications

For younger children, do question/answer examples 3, 4, 7, 8, 9, 12. Omit question/answer examples 1, 2, 5, 6, 11, 12.

For older children, try letting the teams work without adult supervision, giving the children more responsibility for problem solving.

?
PUT ONE QUESTION AND ANSWER ON EACH "EXPERT CARD"
Questionnaire

'EXPERT CARDS'

Q. What is one way that jobs are different in West Germany than they are here?

A. In West Germany the factories can't close without telling the workers a long time before the factory closes. A child from West Germany might not understand that in America a factory can close and move away quickly. A parent who worked for that factory might not have time to find a new job.

Q. What is one way that eating meals is different on an Israeli kibbutz than it is here?

A. In Israel some families live and work together on a big farm called a kibbutz. On a kibbutz hundreds of people eat together in big dining rooms. A child from a kibbutz would think it was funny that in America families eat by themselves.

Q. What is one way that jobs are different in El Salvador than they are here?

A. In El Salvador jobs are hard to find. One out of three people has no job. A child from El Salvador might not understand why Americans think it is bad when one out of ten people cannot find work.

Q. What is one way farming is different in the People's Republic of China than it is here?

A. In China fertilizer to help make plants grow is made from animal waste. In the United States, most fertilizer is made from chemicals. A Chinese child might not understand why American farmers spend hundreds of dollars to buy chemical fertilizers.

Q. What is one way meals are different for families in India than they are here?

A. In India the father gets food first because he has to be able to work. The sons and daughters and the mother get food if any is left. An Indian child might not understand that in America, when there is not enough food, children eat first.

Q. What is one way farming in Japan is different than it is here?

A. In Japan farmers grow one-third more grain on each acre than American farmers do. A Japanese child might not understand why our big American farms grow less food per acre.

Q. What is one way that having babies is different in Norway than it is here?

A. In Norway fewer babies die before their first birthday than the babies here. This is a sign that they are better nourished. A child from Norway might not understand why more babies in America die of hunger or sickness.

Q. What is one way farming is different in Nigeria than it is here?

A. In Nigeria it is hard for small farmers to borrow money to buy seeds and fertilizer. Some spend 192 percent per year on interest. A child from Nigeria might be surprised that farmers in America can usually borrow money and pay interest of 20 percent per year.

Q. What is one way that farming is different in Somalia than it is here?

A. In Somalia on small farms mothers in the family grow all the food that the family eats. A child from Somalia might not understand why some Americans think growing food is men's work.

Q. What is one way that food shopping in Sweden is different than it is here?

A. In Sweden half of the families go shopping in cooperative food stores, which they can help control by voting. A child from Sweden might not understand that most American families shop at supermarkets that they don't control.

Q. What is one way that drinking water is different in Ethiopia than it is here?

A. In Ethiopia most homes have no running water. In small villages a mother and her children may have to walk five hours a day to get water. A child from Ethiopia might be surprised how easy it is to get water in America and how much water most Americans use.

Q. What is one way that having babies is different in Brazil than it is here?

A. In Brazil many more babies die before their first birthday than babies here. This is a sign that they are not as well-fed. A child from Brazil might think it unusual that American babies get more to eat and don't get as sick as babies in Brazil.

WE CAN ALL BE EXPERTS

1. What is one way that jobs are different in West Germany than they are here?

2. What is one way that jobs are different in El Salvador than they are here?

3. What is one way meals are different for families in India than they are here?

4. What is one way that eating meals is different on an Israeli kibbutz than it is here?

5. What is one way farming is different in the People's Republic of China than it is here?

6. What is one way farming in Japan is different than it is here?

7. What is one way that having babies is different in Norway than it is here?

8. What is one way that farming is different in Somalia than it is here?

9. What is one way that drinking water is different in Ethiopia than it is here?

10. What is one way farming is different in Nigeria than it is here?

11. What is one way that food shopping in Sweden is different than it is here?

12. What is one way that having babies is different in Brazil than it is here?

ACTIVITY SIX ★ useful

Global Quiz Game

Description
The group will play a quiz game using concepts covered in this unit.

Related Subjects
Social Studies, Geography, Communications Skills.

Objectives
1. To evaluate students' grasp of concepts taught in this unit.
2. To review concepts learned in this unit about looking at things from different perspectives and on appreciating values and customs of other cultures.
3. To improve analytical thinking.

Materials
A list of correct questions and answers with point scores for each (see samples below).

Procedure
1. In advance, prepare question/answer pairs. Be sure to write questions based on what went on in your classroom. You may want to have the children submit possible question/answer pairs based on information learned in this unit. Assign point values to each question. Organize the questions into subject categories.

Note: If you are familiar with the TV game show, "Jeopardy," you may want to enhance the creativity and fun of this activity by turning the quiz game into a Jeopardy game. The main factor is to reverse the question/answer process so that the contestant picks an answer to which he or she must ask the correct question.

2. On the day of the quiz game set up a "game board" on the blackboard or on butcher paper. This is a representation of the categories and point scores.

3. Explain to the class that they will be playing a quiz game. Divide the group into teams of five or six children. Explain the rules:

- Each team is trying to win as many points as possible.
- The moderator will decide when each team will have its turn. This will be done by following a specific order so that all teams have equal opportunities. First option—Only one child from each team may guess the answer at a time. Team members will take turns so that each child has an equal number of opportunities. Second option—Team members may quietly discuss each question when it is their team's turn. A team spokesperson will state the answer once all members have agreed.
- If a team fails to provide an answer after one try, the next team will have a chance until either the correct answer

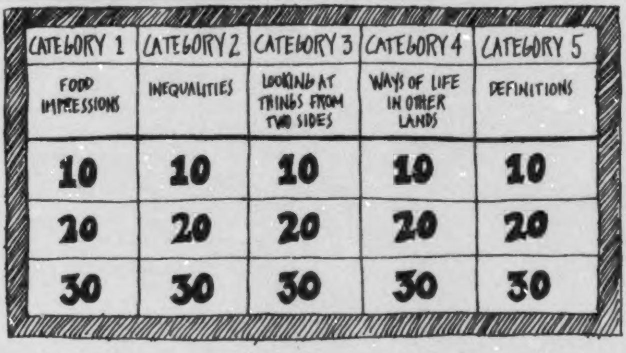
comes up or all the teams give up (decide they do not know the correct answer).

- When a correct answer has been given, points are awarded to the team that stated it. Then the next team has a chance to choose a question square. The team that chooses has the first chance at guessing the answer.
- In choosing a question square, for each category the chooser must choose the lowest point level on the board at the time. The chooser may choose any category that has points left on it. You have the option of deleting this last rule, if you simplify the game by making all questions worth equal points.

4. Play the game. Discuss.

5. Journals—Provide time for making journal entries on the Global Quiz Game.

6. Evaluation—Ask the group to think about the entire first unit and to evaluate what they liked and disliked about the activities. You may choose to discuss these as a group or you may want to have the children write their ideas down.



CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5
FOOD IMPRESSIONS	INEQUALITIES	LOOKING AT THINGS FROM TWO SIDES	WAYS OF LIFE IN OTHER LANDS	DEFINITIONS
10	10	10	10	10
20	20	20	20	20
30	30	30	30	30

Sample Questions

First Category—Food Impressions

10 pts.	1. Q: What is another word for farming? A: Agriculture.
20 pts.	2. Q: Name two grains. A: Rice, corn, wheat, barley, oats, millet ...
30 pts.	3. Q: Name a food we eat that comes from another land. A: Bananas, pineapple, cocoa, coffee, coconut, sugar ...

Second Category—Inequalities

10 pts.	1. Q: Out of 100 people in the world only one is able to have this. A: A college education.
20 pts.	2. Q: What country uses more energy than any other in the world? A: United States of America.
30 pts.	3. Q: Out of 100 people in the world approximately how many are able to read? A: 30 (you might accept 20 to 40).

Third Category—Looking at Things from Two Sides

10 pts.	1. Q: What government program helps poor people buy food? A: Food stamps.
20 pts.	2. Q: Why does/did President Reagan cut back the food stamp program? A: To spend less government money.
30 pts.	3. Q: Why do poor families want the food stamp program continued? A: So they can afford to buy enough food to eat.

Fourth Category—Ways of Life in Other Lands

10 pts.	1. Q: Name a country where half the families belong to cooperative food stores. A: Sweden.
20 pts.	2. Q: Why do mothers and children in dry African countries have to walk up to five hours a day? A: To get water.
30 pts.	3. Q: Name an Asian country where farmers grow more grain per acre than in the United States. A: Japan.

Fifth Category—Definitions

10 pts.	1. Q: What is cooperation? A: Working together.
20 pts.	2. Q: Name a way of doing things that is the opposite of cooperating. A: Competing.
30 pts.	3. Q: What is a sign of whether babies are fed well enough? A: The number of babies dying before their first birthday (infant mortality rate).

UNIT II INTRODUCTION

Where Does Our Food Come From?

This unit begins the core subject area of this curriculum. Students will start the step-by-step process of studying the path of the food we eat—where it comes from, who grows it, and what forces affect it. Unit II contains a variety of activities aimed at acquainting children with farms and farmers. **This unit will be most effective if used in conjunction with or following a science unit on how plants grow and/or a school gardening project.**

The emphasis for this unit should be placed differently for rural than for urban students. Teachers working with children from farm communities may wish to shorten this unit. Depending on your community, you may wish to omit part or all of the introduction-to-farmers material found in Activity Two, "What Does a Farmer Really Look Like?," and Activity Three, "Life of a Farmworker." You may choose to use a more in-depth approach than is described for Activity Four, "Where Have All the Farmers Gone?," and Activity Five, "Let Me Tell You a Story about a Farmer." Make use of your students' knowledge of local farm conditions.

UNIT GOALS

1. Children will gain an appreciation for the people who grow the food we eat.
2. Children will learn about the variety of farms that exist and discover some of the differences and similarities among these farms.
3. Students will understand the historical trend in the U.S. toward fewer farmers and larger farm units.
4. Children will improve their abilities to creatively portray subjects in a variety of media.

Activity One

"Breakfast Can Be a Global Activity" is a useful and enjoyable exercise which will spark interest in the origins of the food we eat. Students will plan a group breakfast and use research and geography skills while learning where the meal was grown.

Activity Two

"What Does a Farmer Really Look Like?" is a key activity in which children meet and talk with farmers. For nonfarm residents, this should provide essential insights into American agriculture.

Activity Three

"Life of a Farmworker," an important lesson, introduces the work of farmworkers, the people who cultivate and harvest much of this nation's fruits and vegetables. Students will read and discuss a descriptive narrative about a woman who has worked in the fields for over 30 years.

Activity Four

"Where Have All the Farmers Gone?" is a key lesson in this unit. Students will learn the history of American farming and practice role-playing and communication techniques in this simulation game.

Activity Five

"Let Me Tell You a Story About a Farmer" is a useful activity that will give students a chance to put together the concepts learned in this unit by writing original stories. It will help the teacher evaluate what has been learned in Unit II.

Options

1. **Farm Pantomimes.** Have the children mime a variety of farm tasks. Examples: plowing a field with a tractor, picking apples on a cool autumn morning, milking cows, going to the bank to try to borrow money, feeding chickens and collecting eggs, hand-picking tomatoes on a hot summer day, bookkeeping in a study with piles of receipts to sort through, spraying a field with pesticides from an airplane, hand-planting seeds, and repairing a tractor inside a barn or garage on a cold rainy day.

ACTIVITY ONE

★ useful

Breakfast Can Be a Global Activity

Description

The group will plan and eat a breakfast which includes a variety of foods and will learn what parts of the world the foods came from.

Related Subjects

Home Economics, Geography, Art, Nutrition.

Objectives

1. To increase awareness of the many places around the world our food comes from.
2. To improve geographic knowledge of where specific countries are.
3. To tie together the ideas from Unit I to those that will be studied in Unit II.
4. To utilize planning techniques.
5. To develop knowledge of sex stereotypes relating to food and agriculture.

Materials

Eating utensils, a variety of breakfast foods, world map, optional—oven or hot plate to keep foods warm, materials for a collage such as paper, pencils, magazines to cut up, construction paper, scissors, glue, drawing implements.

Procedure

1. In advance, discuss the idea of a group breakfast. Have each child describe his or her favorite breakfast food. Make a list of these. Plan a breakfast menu together which includes a variety of common breakfast foods. Choose whether the meal will take the place of the children's breakfasts or whether they will only sample the foods. Organize a method for getting the foods to the classroom. Individual children can be responsible for different sections of the meal, or the group leader can bring in all the foods.

   This is a good opportunity to involve parents in the classroom. You will need to alert them to what the breakfast is all about. You may want to invite fathers and mothers to prepare special breakfast foods and/or to come with their children to the group breakfast.

2. Ask each child to try to find out where his or her favorite breakfast food originates. See the list of suggested sources of information at the end of this activity.

3. On the day of the group breakfast have each person sample each food. Invite volunteers to point out the place of origin of the foods on the world map. Make a chart on the board with columns for each food and its origin. Have each child fill in the information about her or his favorite food.

4. Discuss paths the food traveled before it reached the local store, the different types of people who grew the food, the types of countries the food came from, how the food was transported...

   Examples of food origins:
   pineapples—Hawaii; Mandarin oranges—Japan; oranges, grapefruits—California, Texas, Florida; bananas—Philippines, Honduras, Ecuador; sugar—Dominican Republic, Nicaragua, El Salvador; grain in cereal, toast, and pancakes—midwestern states;

raisins—California; bacon, sausage—Iowa, other cornbelt states; Swiss cheese—Switzerland; coffee—Brazil, Nicaragua; Hershey chocolate (cocoa—Ghana; milk—Pennsylvania; corn syrup—Iowa; paper wrapper—Canadian lumber mill).

You will find that much of the food we eat has traveled a considerable distance from its place of origin. Some foods, such as bananas, can only be produced in special climates. Other foods, such as wheat, eggs, potatoes, and pork, can be produced in most places in the United States. You may want to consider the positive and negative aspects of a food system that requires the massive use of transportation. Discuss the effects on energy use, freshness of produce, variety of produce, livelihood of local farmers, and community preparedness for emergency conditions.

This is a good place to discuss male-female stereotypes surrounding food. Discuss who usually grows food, prepares food, and serves food in different situations. Give examples of both sexes contributing to all steps of the food process. Discuss what stereotypes are and why they occur.

5. Optional—You may want to expand on the idea of our connection to other places. Ask the children to make a list of other things they have at home that come from other countries, such as stereos from Japan, cars from West Germany, or clothing from India. Ask each student to make a collage of things in his or her life that come from other parts of the world, using packages, magazine pictures, or drawings.

6. Optional—This may be a good time to sing "The Bread Song" which can be found in Unit III Activity Six, "What Path Did my Food Take?"

7. Journals—Have the children glue their collages into their journals. Give them a chance to write down what they have learned about how they are connected to other parts of the world.

Note: To get information on the origins of food sold in your area you can contact the State Department of Agriculture, the local Cooperative Extension office, local farmers, or local farm organizations. By looking in the phonebook yellow pages under Food Brokers (wholesalers) and Food Products (manufacturers), you can find further resources on the subject. To find out about a canned product, submit the number on the can to the store where it was purchased. Employees can trace the origin of the can.

Modifications

For older students, have them research farming in some of the countries which grow our food. Save the reports to compare with what will be learned about U.S. farming in future activities in this unit.

For younger students, prepare individual world maps. Have the children draw pictures of foods that come from other countries in the appropriate areas of the world.

ACTIVITY TWO

★ ★ ★ key

What Does a Farmer Really Look Like?

Description
The group will visit several types of farms, if possible, ranging from a small organic farm to a large, highly mechanized, chemical-intensive farm. Or farmers will come to the classroom as guest speakers.

Related Subjects
Science, Music, History, Social Studies.

Objectives
1. To improve observing and listening skills.
2. To experience people who grow food and places where food is grown.
3. To understand the variety of types of farms.
4. To gain exposure to concepts related to agriculture.
5. To practice music skills.

Materials
Some form of transportation for the group to farms in the area, if possible; pictures and/or stories of farmers around the world, pencils, paper, and clipboards or other hard writing surfaces.

Procedure
1. In advance, find out about farmers in your area. You can contact the State Department of Agriculture, your local county Cooperative Extension office, state agricultural schools, produce managers of local food stores, high school Future Farmer of America organizations, local farm organizations such as the Farm Bureau, or local food wholesalers for information. Also, you might try to contact these national organizations for information about farmers in your area: National Farmers Organization (475 L'Enfant Plaza S.W., Washington, DC 20024), National Farmers Union (1012—14th Street N.W., Washington, DC 20005), American Agricultural Movement (100 Maryland Avenue N.E., Washington, DC 20002).

Find out if anyone in the group has farm contacts. If your class is in a city, you should also check with municipal agencies to discover if there are urban farms in your area. Many cities have areas of unused land that are being turned into producing farmland.

Contact local farmers to learn who would be willing to host a tour of their farms or come to the classroom to speak. Plan a trip to two to four farms. Try to include a variety of sizes, crops, and methods. If possible, visit one small organic farm and one large-scale farm where the management uses more highly mechanized, chemical-intensive methods. Set a date. Organize transportation. If a field trip cannot be arranged, invite two to four farmers to come to the classroom. Prepare a set of standardized questions. Ask each farmer to be prepared to discuss these questions, as well as to be ready to contribute other relevant information.

Note: Farmers can be extremely busy people. Most farmers will have more time for tours and speaking visits during the winter months.

Suggested Farm Questions

(1) What size is your farm?
(2) What crops do you grow?
(3) What livestock do you raise?
(4) How would you describe your method of farming?
(5) What type of fertilizers do you use?
(6) What type of pest management system do you use?
(7) What methods of soil conservation do you use?
(8) Where do you go to get information on farming?
(9) Who do you sell to?
(10) How much choice do you have over whom to sell to or what price to sell for?
(11) How much would it cost today to start a farm like yours?
(12) How could the government improve its farm policy?
(13) How was farming on your land done differently fifty years ago?

2. Before the field trip or guest speaker visit, discuss with the class the types of information they are going to be receiving. Remember that the purpose of this activity is to give children exposure to farming concepts. They will not be expected to achieve a thorough knowledge of farm techniques and problems. Ask each child or team of two to four children to be responsible for note-taking on one of the farm question topics.

3. Optional—If neither a field trip nor a guest speaker can be arranged, show a film on farming.

4. Visit the farms or have the guest speakers come.

5. As a follow-up activity, provide some information about farmers in other countries, since much of our food does come from other countries. Have pictures and/or stories available about farmers around the world for the children to look at and discuss.

Suggested sources for pictures and stories: U.S. Committee for UNICEF (331 E. 28th Street, New York, NY 10016), local libraries.

6. Teach the group to sing "The Garden Song," (found at the end of this activity). You may want to teach this before the visits with the farmers and have the group sing for the farmers.

7. Journals—Have the children make entries in their journals about what they have learned about farmers.

Action Ideas

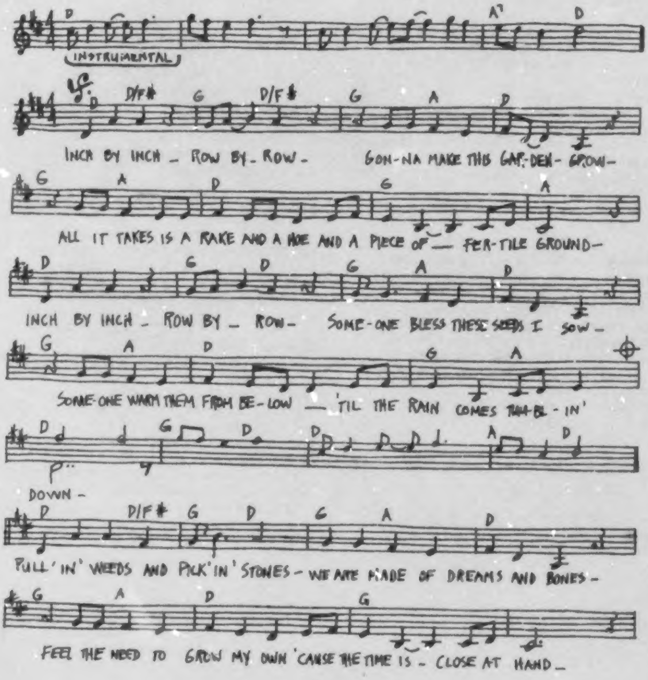
Find out where you can buy farm products from local farmers in your area. Tell your family and friends how they can support local farmers through direct farmers markets, roadside stands, food co-ops, and local food stores that sell local farm products.

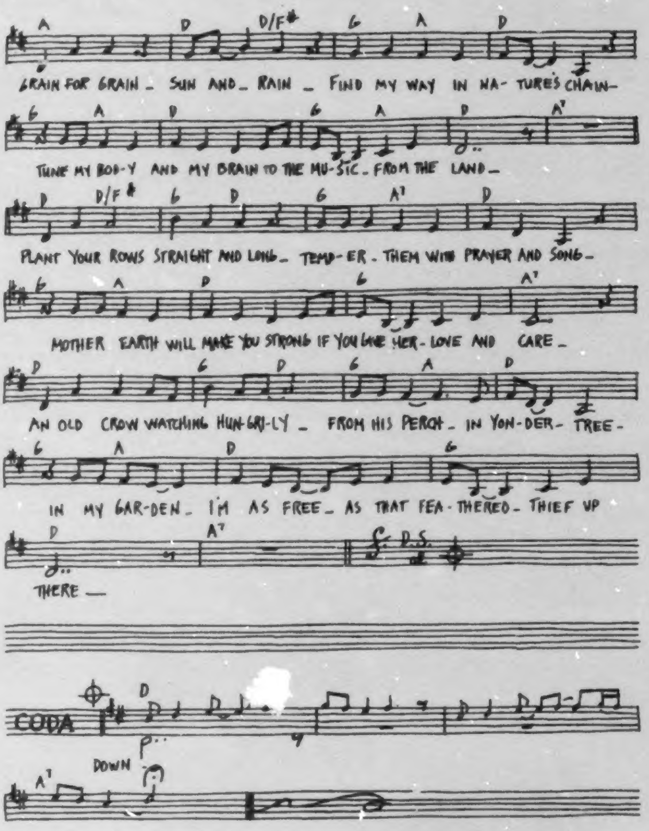
Modification

For older students, have the group research and compare different types and scales of farming. Make a chart using three scales of farming: (1) a home vegetable garden, (2) a small family farm, and (3) a large-scale farming operation. Consider differences in inputs needed to get started such as seeds, fertilizers, pesticides, tools, machinery, buildings, fences, and livestock. Look at costs, sources of funding, ease of getting started, and markets.

GARDEN SONG

WORDS AND MUSIC BY
DAVID MALLETT


D
INSTRUMENTAL
A7
D
D/F#
G
A
INCH BY INCH _ ROW BY _ ROW _ GON-NA MAKE THIS GAR-DEN - GROW -
ALL IT TAKES IS A RAKE AND A HOE AND A PIECE OF — FER-TILE GROUND -
INCH BY INCH _ ROW BY _ ROW - SOME-ONE BLESS THESE SEEDS I SOW -
SOME-ONE WARM THEM FROM BE-LOW — 'TIL THE RAIN COMES TUM-BL - IN'
DOWN -
PULL'IN' WEEDS AND PICK'IN' STONES - WE ARE MADE OF DREAMS AND BONES -
FEEL THE NEED TO GROW MY OWN 'CAUSE THE TIME IS - CLOSE AT HAND -


A D D/F# G A D
GRAIN FOR GRAIN _ SUN AND _ RAIN _ FIND MY WAY IN NA - TURE'S CHAIN -
G A D G A D A7
TUNE MY BOD-Y AND MY BRAIN TO THE MU-SIC - FROM THE LAND -
D D/F# G D G A7 D
PLANT YOUR ROWS STRAIGHT AND LONG - TEMP - ER - THEM WITH PRAYER AND SONG -
G A D G A7
MOTHER EARTH WILL MAKE YOU STRONG IF YOU GIVE HER - LOVE AND CARE -
D G D G A D
AN OLD CROW WATCHING HUN-GRI-LY - FROM HIS PERCH - IN YON-DER - TREE -
G A D G
IN MY GAR-DEN - I'M AS FREE - AS THAT FEA-THERED - THIEF UP
D A7
THERE —
D.S.
CODA
D
DOWN
A7

THE GARDEN SONG by DAVID MALLETT
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ACTIVITY THREE

★ ★ important

Life of a Farmworker

Description
Children will read and discuss the narrative of a longtime farmworker.

Related Subjects
Reading, Vocabulary, Music.

Objectives
1. To develop an appreciation for the role of farmworkers in cultivating and harvesting much of our food supply.
2. To improve reading comprehension.
3. To build vocabulary.
4. To practice music skills.

Materials
Copies for everyone of the narrative of Jessie de la Cruz. This piece is excerpted from an interview in American Dreams: Lost and Found by Studs Terkel (New York: Pantheon Books, 1980), used by permission.

Procedure
1. Explain that the group will be reading a narrative on the life of a woman farmworker. Discuss what the children know about farmworkers.

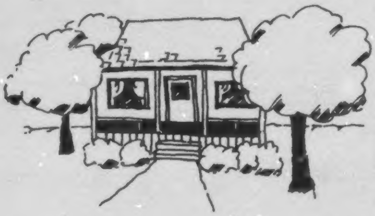
2. Distribute copies of the narrative. Ask everyone to read it—either silently or taking turns to read aloud.

3. Discuss the story, what Jessie de la Cruz's life has been like, whether other farmworkers would have similar stories, and how the story changed students' perceptions of farmworkers.

4. Have the group sing the song "Pastures of Plenty," found at the end of this activity.

5. Journals—Allow time for the children to make journal entries of their thoughts and feelings about farmworkers.

Modifications
For younger students, read the story aloud to the group.



LIFE OF A FARMWORKER

THE STORY OF JESSIE DE LA CRUZ

A one-family dwelling in Fresno. A small, well-kept garden is out front.

"When I was a child growing up as a migrant worker, we would move from place to place. In between, I'd see homes with beautiful gardens, flowers. I always looked at those flowers and said: 'If I could only have my own house and have a garden.' We couldn't as migrant workers. Now, as you walk onto my porch, everything you see is green. (Laughs.) I have a garden now."

She has six grown children; the youngest is twenty-one. She is active in National Land for People.

"The American Dream for me is owning a piece of land. Something you can call home, where you can stay in one place all the time, raise a decent family, build a community. Where you have a job all the time and nobody's gonna fire you. My mother's dream was having a house, but she got sick and died in 1930."

She is fifty-nine.

How can I write down how I felt when I was a little child and my grandmother used to cry with us 'cause she didn't have enough food to give us? Because my brother was going barefooted and he was cryin' because he wasn't used to going without shoes? How can I describe that? I can't describe when my little girl died because I didn't have money for a doctor. And never had any teaching on caring for sick babies. Living out in labor camps. How can I describe that? How can I put into writing when I'm testifying about things that are very deep inside? About seeing all these many people that have their little children killed in the fields through accidents? It's things that are a feeling you can't put into words.

I think the longest time I went to school was two months in one place. I attended, I think, about forty-five schools. When my parents or my brothers didn't find any work, we wouldn't attend school because we weren't sure of staying there. So I missed a lot of school.

My children were picking crops, but we saw to it that they went to school. Maybe one or two of the oldest would stay away from school during cotton-picking time around December, so we could earn a little more money to buy food or buy them a pair of shoes or a coat that they needed. But we always wanted them to get an education.

I musta been almost eight when I started following the crops. Every winter, up north, I was on the end of the row of prunes, taking care of my younger brother and sister. They would help me fill up the cans and put 'em in a box while the rest of the family was picking the whole row.

In labor camps, the houses were just clapboard. There were just nails with two-by-fours around it. The houses had two little windows and a front door. One room, about twelve by fifteen, was a living room, dining room, everything. That was home to us.

Eight or nine of us. We had blankets that we rolled up during the day to give us a little place to walk around doing the housework. There was only one bed, which was my grandmother's. A cot. The rest of us slept on the floor. Before that, we used to live in tents, patched tents. Before we had a tent, we used to live under a tree. That was very hard. This is one thing I hope nobody has to live through. During the winter, the water was just seeping under the ground. Your clothes were never dry.

We followed the crops till around 1966. We went up north around the Sacramento area to pick prunes. We had a big truck, and we were able to take our refrigerator and my washing machine and beds and kitchen pots and pans and our clothing. It wasn't a hardship any more. We wanted our children to pick in the shade, under a tree, instead of picking out in the vines, where it's very hot. When I picked grapes, I could

THE STORY OF JESSIE DE LA CRUZ - PAGE 2

hardly stand it. I felt sorry for twelve, thirteen-year-old kids. My husband said: "Let's go up north and pick prunes."

A friend of ours said: "I'll rent you six acres." We started farming those six acres. We were out there from morning till late, on our hands and knees, planting tomatoes. There was the risk of a cold wave coming and killing our plants. So we had to use hot caps.

One day we had finished planting and said: "Tomorrow we'll put the hot caps on." They're cap-shaped papers with wire. Around two or three o'clock I heard on the radio—I always carry a little portable—I heard the weather was gonna be twenty-three degrees. It was gonna kill our plants. I was scared. I ran back to the group and said: "Hey, it's gonna freeze tonight, we're gonna lose our plants." Right away we started pulling the hot caps on.

We put dirt around it to hold it down. We had them by the thousands. It was very windy and very cold. We started out there on our hands and knees. I was crying. It was beautiful. I'm not calling it beautiful, my crying. But to have little children five, six years old helping us, because they knew how important it was to save those plants. The wind was very strong, it was just ripping those paper caps off of our hands, and you could see them rolling. (Laughs.) We ran out of caps. Okay, each of us got a hoe and started pulling dirt over our plants, very gently. We covered all of them. We came home, it was dark, cold, and wet.

The next morning we were all anxious to find out what had happened during the night. Oh, it was great to go out there and remove the dirt from those plants and watch 'em shoot straight up like anything. We saved every one of 'em. It took hard work to do it.

If it had been one of the big growers, what would have happened? The farmer would just go out there and look and see all the dead plants, and he'd say: "Oh, what the heck." He'd go home and forget about everything. He would get on his pickup, push a button, lift up a telephone, and call the nursery to bring over this certain amount of thousands of plants and call the workers to plant them over again. That's his way of farming.

When we own land and we're working it for ourselves, we're gonna save everything that we can. We're not about to waste anything or lose anything. We keep on working every day. There's no holidays. We're picking until, oh, November. That is work and income. That first year, we sorted our tomatoes and we took 'em to the shipper and we ended up making sixty-four thousand dollars. Six acres between six families.

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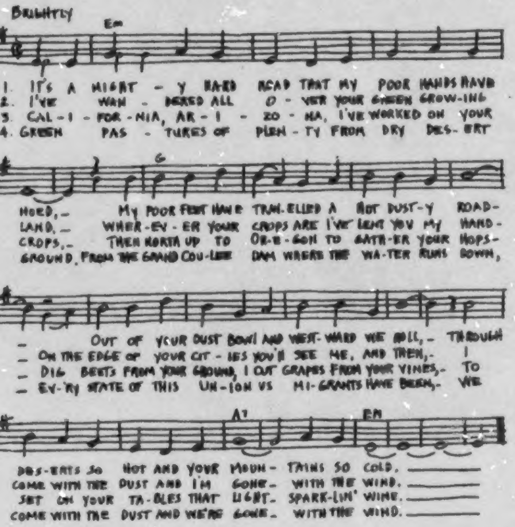
PASTURES OF PLENTY

FOUND IN "ROUND THE WORLD FOLK SONG SING" FOLIO

UNITED STATES
WORDS AND MUSIC BY
WOODY GUTHRIE


BRIGHTLY
Em
1. IT'S A MIGHT - Y HARD ROAD THAT MY POOR HANDS HAVE
2. I'VE WAN - DERED ALL O - VER YOUR GREEN GROW-ING
3. CAL - I - FOR - NIA, AR - I - ZO - NA, I'VE WORKED ON YOUR
4. GREEN PAS - TURES OF PLEN - TY FROM DRY DES - ERT
G
HOED, — MY POOR FEET HAVE TRAV-ELLED A HOT DUST-Y ROAD-
LAND, — WHER-EV - ER YOUR CROPS ARE I'VE LENT YOU MY HAND-
CROPS, — THEN NORTH UP TO OR-E-GON TO GATH-ER YOUR HOPS-
GROUND, FROM THE GRAND COU-LEE DAM WHERE THE WA-TER RUNS DOWN,
— OUT OF YOUR DUST BOWL AND WEST-WARD WE ROLL, — THROUGH
— ON THE EDGE OF YOUR CIT - IES YOU'LL SEE ME, AND THEN, - I
— DIG BEETS FROM YOUR GROUND, I CUT GRAPES FROM YOUR VINES, - TO
— EV-'RY STATE OF THIS UN - ION US MI - GRANTS HAVE BEEN, - WE
A7
Em
DES-ERTS SO HOT AND YOUR MOUN - TAINS SO COLD.
COME WITH THE DUST AND I'M GONE - WITH THE WIND.
SET ON YOUR TA - BLES THAT LIGHT - SPARK-LIN' WINE.
COME WITH THE DUST AND WE'RE GONE - WITH THE WIND.

5. IT'S ALWAYS WE RAMBLE, THAT RIVER AND I,
ALL ALONG YOUR GREEN VALLEYS, I'LL WORK TILL I DIE,
I'LL TRAVEL THIS ROAD UNTIL DEATH SETS ME FREE,
'CAUSE MY PASTURES OF PLENTY MUST ALWAYS BE FREE.

6. IT'S A MIGHTY HARD ROAD THAT MY POOR HANDS HAVE HOED,
MY POOR FEET HAVE TRAVELLED THIS HOT DUSTY ROAD,
ON THE EDGE OF YOUR CITIES, YOU'LL SEE ME AND THEN,
I COME WITH THE DUST AND I'M GONE WITH THE WIND.

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ACTIVITY FOUR ★ ★ ★ key

Where Have All the Farmers Gone?

Description
Students will participate in a simulation of historical changes in the American farm structure.

Related Subjects
Drama, History, Social Studies, Music.

Objectives
1. To increase knowledge of historical trends in American agriculture.
2. To understand the decrease in number of farmers and the increase in size of farm units in the U.S.
3. To improve communication skills by practicing role-playing.
4. Optional—To use music skills.

Materials
Masking tape, marking pen, measuring tape, 4" x 6" cards with information about families in a rural area for two time periods (enough for two for each team), reference materials on agriculture in your area (optional), paper, and pencils.

Procedure
1. Optional—In advance, do some research on an agricultural county in your state. Look for information about farming for two different time periods, such as 1930 and 1980. Research the number of farms, farm sizes, types of crops, types of livestock, farming methods, and any other related information that seems relevant. One suggested source is the **Census of Agriculture: State and County Data** (U.S. Dept. of Commerce, Bureau of the Census), which can be found in most libraries. You might want to find books and articles on farming in your area so that children can research local farming changes themselves.

Sample information, which can be used in the simulations, appears at the end of this activity. The data are based on national averages found in U.S. Census agricultural statistics for the years 1930-1980.

2. Make cards—one for each team for each time period. Each card will describe one family's working, living, and eating information. In addition, for each farm family there should be a description of types of crops, types of livestock, and size of farm. For the second time period simulation, each team will represent one family of descendants of the family it represented in the first simulation. The number of teams needed depends on the researched information and the size of the class. You may choose to have the children help prepare the information cards.

3. On the day of the simulation, use masking tape to mark off proportional farm sizes on the the floor of the room where the simulation is to be done. Provide spaces for town and city inhabitants, too. The sample diagram is designed for a 30' x 30' classroom but could easily be adapted to rooms of other sizes.

4. Explain to the children that they will be acting out the changes in American farms that have happened over the last 50 years. Ask for the children's ideas on the types of changes that have taken place.

Divide the group into the appropriate number of teams of one to three children. If you use the sample information provided, divide the group into twelve teams. Issue one family information card to each team. Have each team stand or sit in the appropriately marked-off area.

5. Ask the children to read the information cards and to be prepared to pretend to be a part of the described family. They should feel free to add details such as the names of the farms or first names, ages, and personalities of family members.

6. Go around the room and have each family team tell the group about itself.

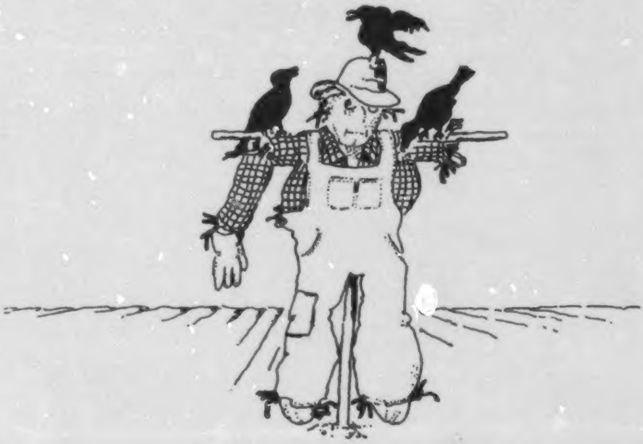
7. When the first part of the simulation is finished, adjust the masking tape floor markers to represent the new farm sizes. Explain that each team will now represent descendants of the first family described. Issue the second information card to each family team. Have the participants sit or stand in the appropriate spaces. Ask them to pretend to be a part of the described family. Again, they should feel free to add details.

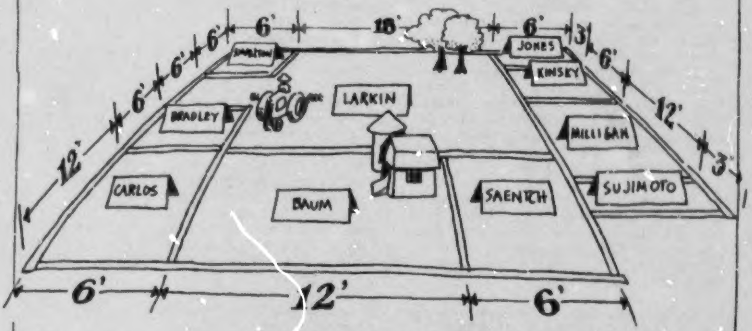
8. Go around the room and have each team tell the class about its family and how life has changed since the first round.

9. When the simulation is finished, discuss the role-playing process, the farmers and townspeople portrayed, the changes in American farming over the last 50 years, the reasons for these changes, and how these changes have affected who has control over decisions about farming in this country.

10. Optional—Have the group sing "The Farmer Is the One."

11. Journals—Allow time for journal entries on the people portrayed, how it felt to play the roles, and changes in American farming.





Sample data for family information cards

(This describes life in Agri County, U.S.A., a rural farming area containing the small town of Smallton. Metro City is fifty miles away from Agri County.)

(1) 1930:

Mr. and Mrs. Jones live with four children on a 25-acre farm. Their crops include apple trees, pear trees, raspberry bushes, and vegetables for home eating. (1930)

Mr. and Mrs. Sujimoto live with three children and two grandparents on a 25-acre farm. Crops include feed corn and vegetables for home eating. Livestock includes chickens for sale as roasters and fryers. (1930)

Mr. and Mrs. Kinsky live with two children and three grandparents on a 50-acre farm. Their crops include clover and timothy for hay or silage, oats, and vegetables for home eating. Their livestock includes dairy cattle. (1930)

Mr. and Mrs. Bradley live with one child and one grandparent on a 50-acre farm. Their crops include tomatoes for fresh market sale and vegetables for home eating. Their livestock includes chickens for egg-laying and one dairy cow for home milk drinking. (1930)

Mr. and Mrs. Milligan live with four children on a 100-acre farm. Their crops include potatoes, beets, and carrots for sale and vegetables for home eating. (1930)

Mr. and Mrs. Saentch live with one child on a 100-acre farm. Their crops include pastureland, feed corn, oats, alfalfa for hay, and vegetables for home eating. Their livestock includes dairy cattle. (1930)

Mr. and Mrs. Carlos live with four children and three grandparents on a 100-acre farm. Their crops include peach trees, plum trees, peas and green beans for fresh market sale, and vegetables for home eating. Their livestock includes one dairy cow for home milk drinking. (1930)

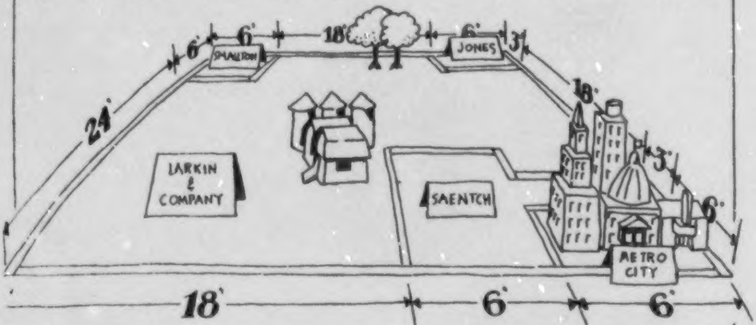
Mr. and Mrs. Baum live with two children on a 200-acre farm. Their crops include pastureland, oats, feed corn, and vegetables for home eating. Their livestock includes beef cattle, sheep, and two ponies for the children to ride and care for. (1930)

Mr. and Mrs. Larkin live with five children and one grandparent on a 500-acre farm. Their crops include pastureland, alfalfa for hay, wheat, feed corn, and vegetables for home eating. Their livestock includes beef cattle. (1930)

Dr. and Mrs. Schwartz live with two children and two grandparents in a house in Smallton. He is a doctor. She is a housewife. They have a small vegetable garden in their back yard. (1930)

Mr. and Mrs. Figaretto live with four children in a house in Smallton. The family runs a small grocery store. (1930)

Mr. and Mrs. Jenkins live with three children and one grandparent in a house in Smallton. He is a mechanic and manages his own gasoline service station. She is a housewife. They have a small vegetable garden in their back yard. (1930)



(2) 1980

Mr. and Ms. Jones. He is a son of the 1930 Jones family. They live with one child on a 25-acre farm. Their crops include apple trees and pear trees and vegetables for home eating. She is a full-time high school teacher in Smallton. (1980)

Mr. Sujimoto is a son of the 1930 Sujimoto family. He moved to Metro City because he wanted the excitement of city life. He works in the electronics industry. He lives alone in an apartment and buys food in a supermarket. (1980)

Mr. and Ms. Kinsky. He is a son of the 1930 Kinsky family. They moved to a house in Smallton because they could not make enough money on the farm to support their family. They live with two children. They both work in the new food processing plant in town. They have a small vegetable garden in the back yard but buy most of their food at the new supermarket. (1980)

Ms. Bradley is a daughter of the 1930 Bradley family. She moved to an apartment in Metro City. The farm had to be sold to pay off farm debts. She lives alone. She works in a clothing store and buys her food at a neighborhood grocery store. (1980)

Mr. and Ms. Mallory. She is the daughter of the 1930 Milligan family. They live with three children in a small house near Metro City. He is an engineer; she is a housewife. The farm was sold because it was losing money. Prices for fertilizer and seeds increased greatly, but prices for the vegetables they grew did not. They have a small vegetable garden in their yard and buy the rest of their food at a supermarket. (1980)

Mr. and Ms. Saentch. He is the son of the 1930 Saentch family. They live with one child and one grandparent on a 125-acre farm that consists of the original family farm and the old Sujimoto farm, which they bought. They both work on the farm. The crops include alfalfa for hay and a vegetable garden for home eating. The livestock include dairy cattle. (1980)

Mr. and Ms. Carlos. He is a son of the 1930 Carlos family. They live with two children in Metro City in a house. He is an actor in the theater and she is a dancer. They sold the farm because prices for peaches and plums went down for a few years while prices for insecticides and the new tractor they needed went up. (1980)

Ms. Baum and Mr. Milne. She is the daughter of the 1930 Baum family. She married Mr. Milne and kept her own name. They live in an apartment in downtown Metro City. The Baums sold the farm to pay off farm debts. She is a lawyer. He is a newspaper reporter. They shop for food at a food co-op. (1980)

Mr. and Ms. Larkin. He is a son of the 1930 Larkin family. They live with two children and two grandparents on a 1500-acre farm. The Larkins bought the old Kinsky, Bradley, Milligan, Carlos, and Baum farms. They decided that the only way to make enough money from farming for the family to live comfortably on was to have a larger farm, which would bring in more total profit. Their crops consist of wheat, corn, oats, and a vegetable garden for home eating. They have one dairy cow for home milk drinking. (1980)

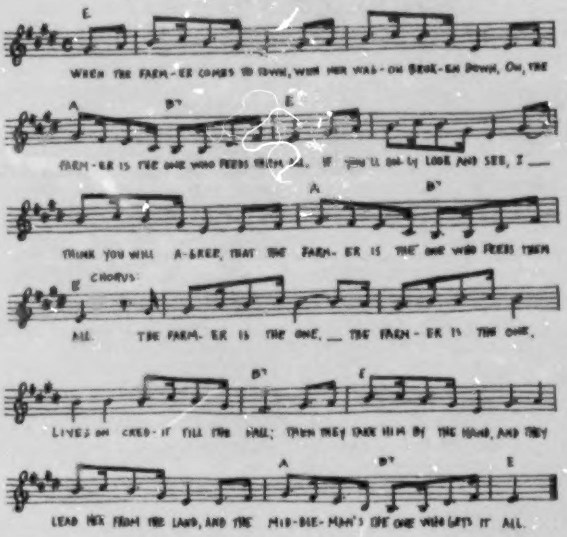
Dr. Schwartz is the daughter of the 1930 Schwartz family. She is a medical doctor. She lives alone in a small house in Smallton. She shops for food at the new supermarket. (1980)

Mr. and Ms. Figaretto. He is a son of the 1930 Figaretto family. They live in the same house in Smallton with three children. They both run the small grocery store. The new supermarket is giving them some trouble because of its competition, but many people still prefer to shop in a smaller place from a family they know. (1980)

Mr. and Ms. Jenkins. He is a son of the 1930 Jenkins family. They live with two children in a house in Smallton. He and one of his brothers now run the service station as partners. She is a housewife. They shop at both the Figaretto small grocery store and the new supermarket. (1980)

THE FARMER IS THE ONE

FROM THE PUBLIC DOMAIN


E
WHEN THE FARM-ER COMES TO TOWN, WITH HIS WAG-ON BROK-EN DOWN, OH, THE
A B7 E
FARM-ER IS THE ONE WHO FEEDS THEM ALL. IF YOU'LL ON-LY LOOK AND SEE, I
A B7
THINK YOU WILL A-GREE, THAT THE FARM-ER IS THE ONE WHO FEEDS THEM
E CHORUS:
ALL. THE FARM-ER IS THE ONE, THE FARM-ER IS THE ONE,
B7 E
LIVES ON CRED-IT TILL THE FALL; THEN THEY TAKE HIM BY THE HAND, AND THEY
A B7 E
LEAD HIM FROM THE LAND, AND THE MID-DLE-MAN'S THE ONE WHO GETS IT ALL.

WHEN THE LAWYER HANGS AROUND
WHILE THE BUTCHER CUTS A POUND
OH THE FARMER IS THE ONE ...
WHEN THE PREACHER AND THE COOK
GO A STROLLING BY THE BROOK, THEN...

WHEN THE BANKER SAYS HE'S BROKE
AND THE MERCHANT'S UP IN SMOKE
THEY FORGET IT'S THE FARMER
FEEDS THEM ALL
IT WOULD PUT THEM TO TEST
IF THE FARMER TOOK A REST
THEN THEY'D KNOW THAT IT'S THE
FARMER FEEDS...

(LAST CHORUS)
... LIVES ON CREDIT TIL FALL
WITH THE INTEREST SO HIGH
IT'S A WONDER HE DON'T DIE
FOR THE MORTGAGE MAN'S THE ONE WHO GETS IT ALL!

ACTIVITY FIVE

★ useful

Let Me Tell You a Story About a Farmer

Description
The children will create stories about people who work on farms with the help of farm pictures.

Related Subjects
Creative Writing, Language Arts, History, Science.

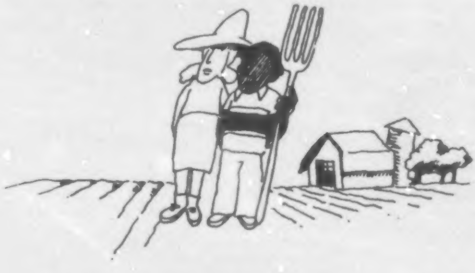
Objectives
1. To serve as an evaluation of knowledge gained from this unit.
2. To review the concepts about farmers and farming learned in this unit.
3. To improve story-telling and creative-writing skills.

Materials
Paper, pencils or pens, folders full of magazine pictures of rural and farming scenes, optional—prints of farm paintings from local libraries, books with pictures of farming.

Procedure
1. In advance, clip and save magazine pictures of farming and rural life. You may want to ask the children to bring in some of these. Possible sources: **Mother Earth News, Organic Farm Worksheet, Redwood Rancher, California Farmer, Farm Journal,** and **Organic Gardening.**

Optional—Obtain prints of farm scenes and books with pictures of farming. Suggested book: **The American Farm: A Photographic History** (Conrat and Conrat, Houghton Miflin, 1977).

2. Explain that the class will be writing stories about farmers. Pass around the folders of pictures. Ask each child to select one picture. Have each child write a creative story about the picture using information learned in other activities in this unit. Encourage them to add facts and details learned from meeting farmers.



3. Ask the children to write a second chapter to their stories describing farm life fifty years ago.

4. When everyone is finished writing, bring the group back together. Have volunteers read their stories to the group. Discuss.

5. Journals--Have the children put their stories into their journals.

6. Evaluation--Ask each child to write a short evaluation of the activities in this unit. These should also be placed in the journals.

Modification

For younger students--Have the group create a group story. Show a picture to the group or let a student choose a picture. Have the group plan the type of story it will create--comic, tragic, truthful, fantasy, past, future, or present. Make sure that the story-telling rules are agreed upon.

One procedure is to have a child begin the story. After finishing a short section, the story-teller suddenly claps her or his hands and points to someone else, who continues the story. This proceeds until the last child is pointed to, who then finishes the story.

UNIT III INTRODUCTION

How Do We Get Our Food?

This unit continues the step-by-step study of the food system begun in Unit II, "Where Does Our Food Come From?" Unit III is a very important unit that will clarify students' understanding of the food system. They will learn how and by whom food is processed, packaged, transported, advertised, and sold. Because our food system is so vast and well-integrated, activities in this section will be of high relevance to groups in every section of the country.

UNIT GOALS

1. Children will understand the steps their food goes through between farm and table.
2. Students will learn some of the methods of consumer psychology used by processors, packagers, retailers, and advertisers.
3. Children will improve their abilities to critically analyze and compare different processes.

Activity One
"Visit to a Supermarket" is a key activity that involves researching a variety of topics at the supermarket. This exercise lays the groundwork for many of the following activities while teaching a variety of consumer, mathematics, and observation skills.

Activity Two
"Processed Foods—What's the Difference?," a useful lesson, asks the students to prepare and then compare and contrast three similar meals made from ingredients with different levels of processing. This enjoyable activity utilizes mathematics, home economics, and comparative analysis.

Activity Three
"What's in the Package?" is a short important activity which analyzes the packaging stage of the food system. Students will learn about ecology as well as discovering some consumer psychology methods.

Activity Four
"Petroleum Palace Restaurant" is an important activity that presents the interrelationship of food and energy in a very enjoyable way, using "menus" showing the energy "costs" of a meal.

Activity Five
"Food Ads—What's in Them for Me?" is a key activity that will enable students to analyze the role of food advertising. The children will observe and make a record of food ads in a variety of media. They will have a chance to employ drama techniques and creative writing skills by making their

own truthful and informative ads.

Activity Six

"What Path Did My Food Take?" serves as an evaluation of what was learned during this unit. In this useful exercise, children create graphic and written presentations on the steps in the food system.

Options

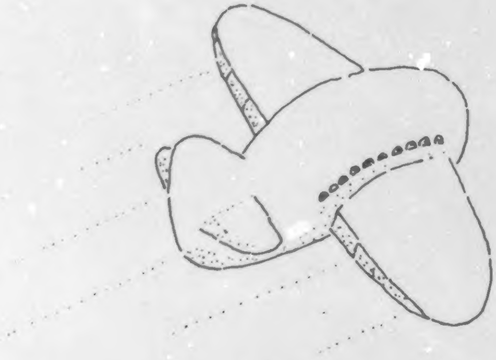
1. **What's in a Name?** For older students, ask each child to research the parent corporation of the company manufacturing his or her favorite food. Visit the reference section of a local library and ask to use the **Standard Directory of Advertisers** (Skokie, Ill.: National Register Publishing Co). This identifies parent companies for all advertised items.

For example, one corporation, Beatrice Foods, owns more than one hundred brands including Dannon Yogurt, La Choy Chinese foods, Sunbeam bread, Meadow Gold milk, Rosarita Mexican foods, Eckrich sausages, Louis Sherry ice cream, Holloway Milk Duds, and Butter Krust bread.

Another useful reference is **Everybody's Business: The Irreverent Guide to Corporate America** by Moskowitz, Katz, and Levering (New York: Harper & Row).

2. **Food Monopoly.** Discuss the concept of monopoly. Ask the students to picture a "Monopoly" game. At the start of the game there are many players, all with money, and "rents" for landing on spaces are very low. At the end of the game there is only one player with money—a great deal of it. Everyone else has gone "bankrupt." "Rents" for landing on spaces are very high.

Pretend that the object of the "Monopoly" game is to build supermarkets or to produce brand-name food products instead of houses and hotels. At the end of the game there would be one supermarket owner or food manufacturer left, charging very high food prices. The other supermarket owners would be bankrupt. Discuss how this applies to the increasing size and decreasing number of food companies today.



ACTIVITY ONE ★ ★ ★ key

Visit to a Supermarket

Description

Students will visit a local supermarket. They will observe and make records on a variety of topics.

Related Subjects

Mathematics, Nutrition, Home Economics.

Objectives

1. To improve observing and note-taking skills.
2. To increase awareness about supermarkets, the place most Americans purchase their food.
3. To improve consumer skills and knowledge.
4. To use mathematics skills.

Materials

Transportation, paper, pencils, and clipboards, or other hard surfaces for writing on in a store.

Procedure

1. In advance, organize a field trip to a local supermarket. Arrange for permission to visit the store from the store manager. If a group field trip cannot be arranged, plan to have the children visit a supermarket as a homework assignment. This is a good opportunity to involve parents.

2. Explain to the children that they will be visiting a supermarket to prepare for future activities. Explain that they will be expected to observe what a supermarket sells and how it displays the items it has for sale. They will research how certain foods, both processed and unprocessed, are available, and they will compare the prices of food items in different stages of processing. They will also look for how many companies produce different food items.

You may want to divide the class into teams of three to six children so that each team is responsible for finding one part of the information needed. For example, Team 1 could find the package weight and price of several types of potatoes—fresh, frozen, and canned. Team 2 could find the package weight and price of several types of prepared potatoes—potato chips, scalloped potatoes, and french-fried potatoes. Team 3 could find the package weight and price of several types of tomatoes—fresh, sauce, and ketchup. Team 4 could research which items have the most display space and which have the least. Examples to compare: pet food, breakfast cereal, grains, cheeses, and dried beans. Team 5 could research the total number of companies that produce particular items—breakfast cereal, soup, or baby food. A sample worksheet appears at the end of this activity.

3. Have the students visit the store and fill out their worksheets.

4. Afterwards, discuss what was seen. Have the teams share their records with the

group. Help the group work through the mathematics to determine prices per pound as needed.

5. As a group, compare and discuss the results. Consider why the cost of similar food items varies and where the extra money goes. Discuss the items that were most obviously displayed, how nutritious they were, and their price per pound. Discuss the number of companies producing the different types of food and how much competition exists.

6. Journals—Allow time for the children to put their supermarket record sheets in their journals and to make entries on what they learned about supermarkets.

Modifications

For younger students, limit the number of researched items. Have the children research three types of potatoes and three types of tomato products.

For older students, ask for additional information. Ask the children to make their own choice of a food and find out its price per pound in various stages of processing. Ask them to write an essay on why they think certain foods are displayed more obviously than others.

SUPERMARKET
FRESH FISH $3.29
ORANGES 5 lbs $1.00
SOAP 3 FOR $1.00
SPINACH 59¢

VISIT TO A SUPERMARKET

Find the products listed below in a supermarket. Give the price and weight of each. If you find more than one price, use the lowest price. (16 oz. = 1 lb.)

1. Potatoes

Type of Item	Fresh	Frozen	Canned
Price on Package			
Weight on Package			
Weight in Pounds			
Price per Pound			

2. Prepared Potatoes

Type of Item	Potato Chips	French Fries	Scalloped Potatoes
Price on Package			
Weight on Package			
Weight in Pounds			
Price per Pound			

3. Tomatoes

Type of Item	Fresh	Tomato Sauce	Tomato Ketchup
Price on Package			
Weight on Package			
Weight in Pounds			
Price per Pound			

4. List some of the items that are displayed most obviously (for example, by the checkout stand or at the ends of the aisles).

1. ______________ 4. ______________

2. ______________ 5. ______________

3. ______________ 6. ______________

For three of these items, give the price and weight.

Type of Item			
Price on Package			
Weight on Package			
Weight in Pounds			
Price per Pound			

5. List a few of the types of items that take up the most display space (suggestions: pet food, breakfast cereal).

1. ______________ 3. ______________

2. ______________ 4. ______________

List a few of the types of items that take up the least display space (suggestions: grains, dried beans).

1. ______________ 3. ______________

2. ______________ 4. ______________

6. Find the following items in the store. Count the number of different companies that manufacture each item.

Item	Total Number of Manufacturing Companies
1. Canned soup	
2. Breakfast cereal	
3. Baby food	

Can you find any item in the store with five or more manufacturing companies?

Which item? ______________ How many companies? __________

ACTIVITY TWO ★ useful

Processed Foods—What's the Difference?

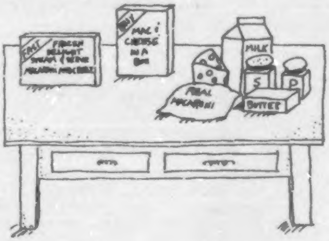
Description
Students will prepare and taste one food purchased at different levels of processing.

Related Subjects
Nutrition, Mathematics, Home Economics.

Objectives
1. To practice comparative analysis
2. To learn the differences in the cost, taste, nutritive values, and preparation of foods purchased at different levels of processing.
3. To utilize home economics skills in preparing food.
4. To practice mathematics.

Materials
Kitchen utensils (the list depends on the food to be prepared) and food at different levels of processing to be prepared.

Procedure
1. In advance, discuss the purpose of comparing foods made from products with different levels of processing. Have the group choose a type of food to prepare that can be bought in three or more levels of processing. Example: frozen precooked macaroni and cheese; packaged macaroni and cheese (the kind you mix yourself); and macaroni, cheese, milk, and spices to cook from scratch. Other examples: enchiladas, spaghetti and sauce, and mashed potatoes.



2. Have ingredients, utensils, and recipes ready. Divide the group into teams. Each team will prepare one of the three levels of convenience food. Depending on the size of the group, the number of adult helpers, and the amount of kitchen space, you may have to stagger cooking times and plan quiet activities for the children while their team is waiting to cook.

3. Have everybody sample the results of the three different levels of processing after they have been prepared. Compare taste, nutrition, cost, and time spent to prepare. Discuss the advantages of processed foods

(savings in time and labor) and their disadvantages (food additives, loss of nutritional value, higher cost). Review the advantages of buying unprocessed foods and cooking at home (more nutritional value, lower cost, control of taste) and the disadvantages (time of preparation).

Note: For more information on nutrition you can road **Nutrition Scoreboard** by Michael Jacobson (New York: Avon Books, 1975).

4. Journals—Provide time for the children to make journal entries about their experiences preparing and eating foods of different levels of processing.

Action Ideas

Find out where in your community you can purchase whole unprocessed foods. Tell your family and friends how to save money by purchasing and preparing unprocessed foods when possible.

ACTIVITY THREE

★ ★ important

What's in the Package?

Description
Children will bring in food packages from home and make a chart of their composition and uses.

Related Subjects
Nutrition, Science, Reading, Ecology, Home Economics.

Objectives
1. To appreciate the variety in food packaging types, purposes, and uses.
2. To improve comparative thinking skills.
3. To practice organizing ideas into a chart.
4. To learn about the ecological aspects of the renewability and recyclability of food packages.

Materials
Packages which the students bring in from home, butcher paper, marking pen, paper, and writing materials.

Procedure
1. Explain to the group that you will be studying the types, purposes, and uses of food packages. Ask each child to bring in at least one food package from home. Try to get a wide variety with as many imaginative styles as possible—cans, jars, styrofoam, plastic, cardboard, and multipackages. Empty packages are preferable, but unopened ones are acceptable as long as they do not require refrigeration.

2. Have each child present her or his package from home to the group. Make a chart on the butcher paper, and/or ask each child to make an individual chart. A sample worksheet is provided. Include the name of product, contents, manufacturer, material used, whether the material is renewable or nonrenewable, if nonrenewable whether it is recyclable or not, number of layers of packaging materials, and other comments.

3. Discuss the energy use, deceptiveness or truthfulness in size, shape, or artwork, whether the number of layers of minipackets is justifiable for the particular food, and if there are alternatives that are more environmentally sound.

SUPERMARKET
SWEET TREAT CEREAL
POP
CHIP
CHEESE SPREAD
ENRICHED BREAD
EGGS

4. Optional—Ask each child to read aloud the ingredients listed on his or her package. Discuss.

Action Ideas

Write complaint letters to companies that you believe have put out a deceptive or wasteful package or supportive letters to companies that seem to put out honest, practical packages. Find out about recycling centers in your community. Educate your family and friends on how and why to purchase fewer nonrenewable, nonrecyclable containers and to recycle when possible.

Modifications

For older students, you may want to have the children research and report on various aspects of food packaging. Divide the class into teams of three to eight students. One team could study the concepts of renewable and nonrenewable resources. One team could study recycling and how food packages can be recycled. One team could study packaging uses for preservation and protection. One team could study packaging "gimmicks" for consumers. Each team should prepare to give a group teach-in on its topic.

WHAT'S IN THE PACKAGE?

Name of product and contents	Manufacturer	Materials in package	Renewable or nonrenewable	Recyclable or nonrecyclable	Comments
Example: POST RAISIN BRAN CEREAL	GENERAL FOODS CORPORATION	1. CARDBOARD BOX 2. PLASTIC INNER BAG	1. RENEWABLE 2. NONRENEWABLE	1. RECYCLABLE 2. NONRECYCLABLE	

ACTIVITY FOUR ★ ★ Important

Petroleum Palace Restaurant

Description
Students will choose lunch menu items from an imaginary restaurant where prices are based on energy efficiency.

Related Subjects
Mathematics, Science, Ecology, Nutrition, Drama.

Objectives
1. To gain knowledge of the interrelationship of food and energy.
2. To utilize mathematics skills.

Materials
Paper, pencils, copies for everyone of the "Menu," copies for everyone of the chart "Energy Used in Producing Food," optional—copies for everyone of the "Price List and Explanations for Food Sold at Petroleum Palace," copies of real menus from restaurants (optional).

Procedure
1. Distribute copies of the chart, "Energy Used in Producing Food." Discuss the stages of producing various foods and how energy is used during each stage.

2. Divide the group into teams of two, three, or four. Explain that they are going to pretend to order lunch from an imaginary restaurant. The teams may want to move their desks or chairs into groupings that simulate a restaurant. Read the following explanation:

> You have all been invited out for lunch at a very special restaurant. It is called "Petroleum Palace" and its unusual feature is that prices are based on the amount of energy used for each food. The owner of the restaurant is a serious environmentalist, and she is concerned about the need to conserve energy in this country. In order to do her part she charges a great deal for foods requiring much energy to grow and process, and lower prices for food using less energy. She is so concerned that Americans understand energy used in food production that she offers a discount to any patron who explains why one food is "energy-cheaper" than another. We won't be able to eat at the "Petroleum Palace," but I'll pass out menus and allow you to choose the food you would order there. For this meal, I want you to base your selection not on what you like the best or on nutrition, but on energy conservation.

3. Distribute menus. Give the students time to make their orders. Encourage them to write a line or two explaining each choice.

4. Read the costs per item, and instruct students to record these on their order.

Allow students to add up their bills and place the amount in the space labeled "Subtotal."

5. Have the group discuss the energy differences between foods in each course of the meal. Students should take a ten-cent discount for every correct explanation they make.

6. Enter the amount of discount in the space labeled "Discount." Subtract the discount from the subtotal to determine the "Total Bill."

7. You may want to pass out copies of the "Explanations" for the children to keep and put in their journals.

8. Optional—Pass out copies of real menus from one or more restaurants. Have the children try to alter some of the prices for items on the menu to make them reflect the amount of energy involved in the growth, transport, storage, and preparation of the foods.

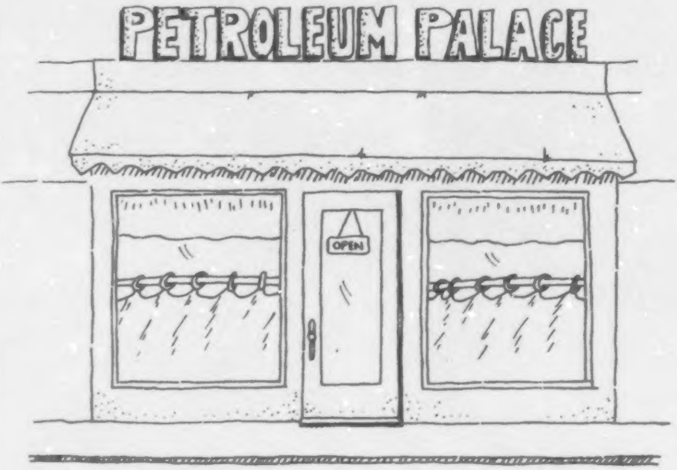
9. Journals—Provide time for journal entries on food and energy.

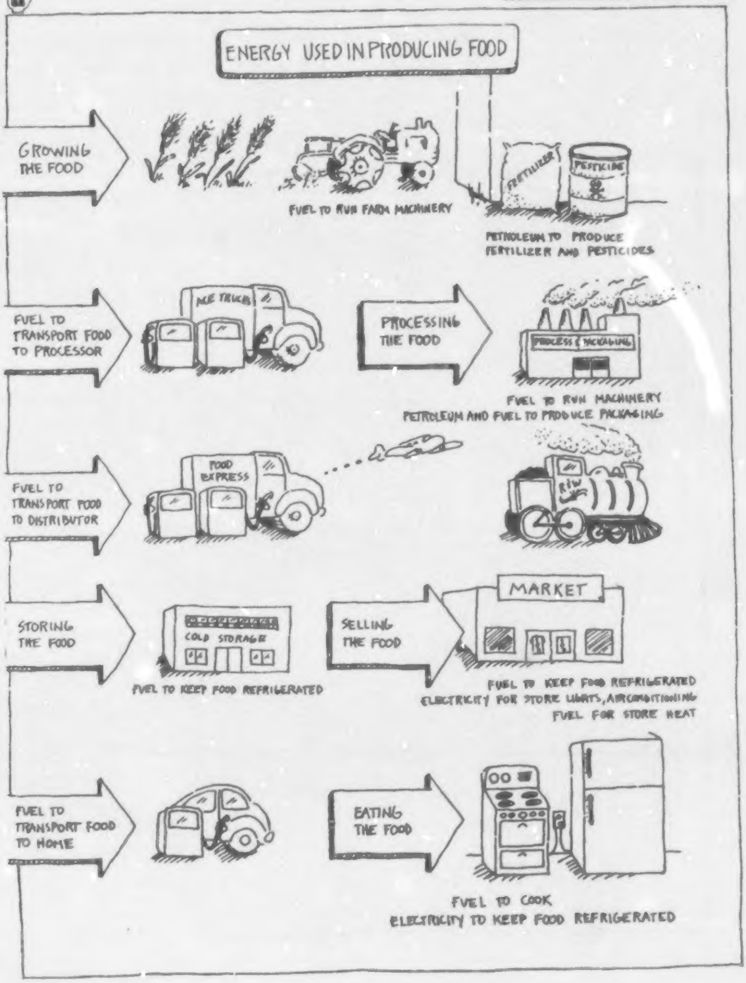
Note: This activity has been adapted from Deborah Katz and Mary Goodwin, **Food: Where Nutrition, Politics, and Culture Meet** (Center for Science in the Public Interest, 1755 "S" Street N.W., Washington, D.C. 20009, 1976, $5.50)

For further information, Katz and Goodwin suggest reading **Energy and Food**, by Albert Fritsch, Linda Dujack, and Douglas Jimerson.

Action Ideas

Research paths for food to travel from ground to table that require small energy inputs. Help educate the people around you about the interrelationship of energy and food.




ENERGY USED IN PRODUCING FOOD
GROWING THE FOOD
FUEL TO RUN FARM MACHINERY
FERTILIZER
PESTICIDE
PETROLEUM TO PRODUCE FERTILIZER AND PESTICIDES
FUEL TO TRANSPORT FOOD TO PROCESSOR
ACE TRUCKS
PROCESSING THE FOOD
PROCESS & PACKAGING
FUEL TO RUN MACHINERY
PETROLEUM AND FUEL TO PRODUCE PACKAGING
FUEL TO TRANSPORT FOOD TO DISTRIBUTOR
FOOD EXPRESS
R&W
STORING THE FOOD
COLD STORAGE
FUEL TO KEEP FOOD REFRIGERATED
SELLING THE FOOD
MARKET
FUEL TO KEEP FOOD REFRIGERATED
ELECTRICITY FOR STORE LIGHTS, AIRCONDITIONING
FUEL FOR STORE HEAT
FUEL TO TRANSPORT FOOD TO HOME
EATING THE FOOD
FUEL TO COOK
ELECTRICITY TO KEEP FOOD REFRIGERATED

PETROLEUM PALACE MENU

APPETIZERS: CHOOSE ONE FROM EACH PAIR

- Fresh Juice or Frozen Juice
- Cracker A (unwrapped, available to the store in bulk), OR
  Cracker B (wrapped individually, packed in small cartons)
- Butter or Margarine

MAIN DISH: PLEASE MAKE A FIRST AND SECOND CHOICE AS WE DO NOT ALWAYS CARRY EACH ENTREE:

- Luncheon Meat
- Chicken
- Turkey
- Rice and Vegetables
- Beef (Grass-Fed)
- Beef (Grain-Fed)

VEGETABLE: SORRY, TODAY WE HAVE ONLY CARROTS, BUT YOU MAY CHOOSE YOUR PREFERRED TYPE:

- Fresh Carrots
- Dehydrated Carrots
- Frozen Carrots
- Canned Carrots

DRINKS: PLEASE CHOOSE A FIRST AND SECOND CHOICE AS WE SOMETIMES RUN SHORT OF ONE KIND OF DRINK AT LUNCH:

- Soft Drink (in aluminum can)
- Soft Drink (in returnable glass bottle)
- Milk (in carton)
- Beer (in aluminum can)
- Beer (in returnable glass bottle)
- Juice (in returnable glass bottle)

DESSERT: CHOOSE ONE

- Apples (homegrown in our restaurant's own garden,
OR store bought)
- Walnuts (shelled,
OR unshelled)
- Ice Cream

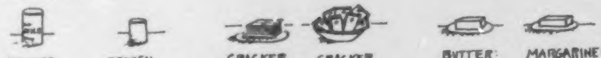
SUBTOTAL ______

DISCOUNT ______

TOTAL BILL ______

PRICE LIST AND EXPLANATIONS FOR FOOD SOLD AT PETROLEUM PALACE
(PRICES ARE PROPORTIONAL TO ACTUAL ENERGY EXPENDITURE)

APPETIZERS



CANNED JUICE: 12¢
FROZEN JUICE: 4¢

FREEZING AND PROCESSING USE A GREAT DEAL OF ENERGY, BOTH INITIALLY AND FOR STORAGE

CRACKER A: 10¢
CRACKER B: 15¢

FOOD EXCESSIVELY PACKAGED OR ONLY AVAILABLE IN SMALL PACKAGES IS MORE ENERGY INTENSIVE THAN FOODS UNWRAPPED OR AVAILABLE IN BULK

BUTTER: 15¢
MARGARINE: 5¢

MAIN DISH

LUNCHEON MEAT: $1.60
CHICKEN .96
TURKEY: $1.06
RICE AND VEGETABLES: .45
GRASS-FED BEEF: $1.48
GRAIN-FED BEEF: 2.08

ANIMALS ARE INEFFICIENT CONVERTERS OF PROTEIN. A POUND OF MEAT REQUIRES ABOUT FOUR TIMES THE ENERGY TO PRODUCE AND MARKET AS A POUND OF VEGETABLE PROTEIN. SOME ANIMALS ARE MORE EFFICIENT CONVERTERS OF PROTEIN THAN OTHERS

VEGETABLE

FRESH CARROTS: 12¢
DEHYDRATED CARROTS: 92¢
FROZEN CARROTS: 31¢
CANNED CARROTS: 23¢

PROCESSED VEGETABLES REQUIRE MORE ENERGY THAN FRESH VEGETABLES; FREEZING AND DEHYDRATION ESPECIALLY REQUIRE LARGE AMOUNTS OF ENERGY

DRINKS

SOFT DRINK (ALUMINUM CAN): 45¢
SOFT DRINK (RETURNABLE BOTTLE): 31¢
MILK: 34¢
JUICE (BOTTLE) 12¢
BEER (ALUMINUM CAN): 50¢
BEER (RETURNABLE BOTTLE): 25¢

ALUMINUM CANS REQUIRE A GREAT DEAL OF ENERGY TO MINE AND MANUFACTURE; NONRETURNABLE CONTAINERS USE MUCH MORE ENERGY THAN RETURNABLE CONTAINERS WHICH CAN BE REUSED APPROXIMATELY 15 TIMES

DESSERT

HOMEGROWN APPLE: 3¢
STORE-BOUGHT APPLE: 19¢

UNSHELLED WALNUTS: 39¢

SHELLED WALNUTS: $1.04
(ANOTHER COST OF PROCESSING)

ICE CREAM: 60¢
(LARGE QUANTITIES OF MILK ARE USED; FREEZING IS NECESSARY)

ACTIVITY FIVE

★ ★ ★ key

Food Ads–What's in Them for Me

Description

The children will make records of the food ads they see or hear over a specific period of time. They will analyze the ads and then create their own food ads and food-ad menus. This activity includes a series of individual exercises and may take a little extra time to complete.

Related Subjects

Reading, Nutrition, Creative Writing, Drama.

Objectives

1. To improve understanding of the role of advertising in our society.
2. To practice observing and record-keeping skills.
3. To improve the capacity for independent thinking.
4. To use creative writing skills.
5. To practice drama and role-playing techniques in front of a large group.

Materials

Pencils, paper, butcher paper and marking pen or blackboard and chalk, newspapers and magazines with food ads, drawing paper, colored pencils or other drawing implements, optional—tape recorder and film "Seeing through Commercials," (available from the Justice and Peace Center, 1016 N. 19th Street, Milwaukee, WI 53233).

Procedure

1. Optional—Show the film "Seeing through Commercials." Discuss.

2. Explain that this activity will start the children thinking about how the food industry uses advertising. Ask each child to fill out the accompanying chart with a log of the food ads seen or heard over a specific period of time. This chart should contain the name of product advertised, a description of the product, the company that sells it, where the ad was found, when the ad was broadcast or printed, the size or length of the ad, and a brief description of the ad. Suggested sources: billboards, TV, radio, newspapers, magazines.

Suggest that everyone pay attention to the types of people portrayed in different types of ads—females, males, children, adults, aged persons, Blacks, Hispanics, Asians, Native Americans, Whites.

3. When the children bring back their logs, have each present his or her findings to the group. Make a chart on the butcher paper with name of product, company, and advertising method. The methods will include associations with idealized attributes such as youth, beauty, sexiness; testimonials by famous persons; presentations on the facts behind why a product is superior to others; special qualities such as convenience, newness, or healthfulness; gimmicks such as prizes, gifts, coupons; and nonsensical lines or songs.

4. Discuss the types of methods used, the differences found in different media, the truthfulness of the ads, the types of ads people think would be effective for themselves or their families. Also, discuss how different types of people (women, children, men, aged persons, Blacks, Hispanics, Asians ...) are represented, whether the portrayals are truthful, whether prejudices are shown ...

5. Optional:

(a) Explain that the children will be creating menus for one day's meals for an imaginary family using information in food ads. Divide the group into teams of two to four children. Ask each team to plan an imaginary menu on paper using only foods that were found in ads. The menu should include a full day's meals and snacks. Invite the teams to be creative when designing the meals and not to feel obligated to present a balanced nutritious plan (as this will be very hard with some advertised foods).

(b) Ask each team to also come up with a short description of the imaginary people for whom this menu is designed, based on the types of people portrayed in the food ads. To further build on the use of creative writing you may want to ask individuals or teams to write short stories about the imaginary people they have planned menus for. These stories could chronicle the daily lives of these people (e.g., "A Day in the Life of ...").

(c) When all the menus, descriptions, and stories are written, bring the class back together. Have volunteers share their efforts with the group.

(d) Discuss how the types of food advertising relate to nutrition, how they relate to general eating habits of people in the United States, how eating habits have changed over the years, and whether advertising has affected this.

6. Explain that the students will be creating their own food ads. Some will be writing ads to convince people to purchase nutritious whole foods that are not often advertised, such as fruits, vegetables, and whole grains. Others will work on truthful ads about products that are highly advertised, such as breakfast cereals, snack foods, or soft drinks. Divide the group into teams of three to four children based on the types of ads the children want to work on. Discuss advertising methods such as catchy headlines, bold writing, snappy language, and illustrations.

7. Make writing and drawing materials available. Have each team draw one or more newspaper or magazine ads. Ask the teams to create one radio ad about food to be read aloud to the group and one TV ad to be acted out for the class.

8. Share with the group. Discuss.

9. Journals—Give children time to put copies of their ad records, food ad menus, short stories, and original food ads into their journals. Ask them to make entries about the role of food advertising.

Action Ideas

Write to Action for Children's Television (46 Austin Street, Newtonville, MA 02160) to find out their strategies for improving the quality of advertising on children's television. Write complaint letters to companies that you think have presented untruthful advertisements or supportive letters to ones that seem to use honest advertising.

Modifications

For younger students, simplify the record-keeping by asking children to merely list the names of the products they see or hear advertised. Discuss the ads as a group. Omit Step 5.

For older students, try for a more in-depth study of food ads. Assign different students to different media categories. These could include two hours of Saturday morning TV (this could be broken down so that different children cover different stations or they could choose a combination of stations), one Sunday newspaper, three magazines (different children can be responsible for specific categories such as children's, women's, men's, news, or sports), or billboards. Have each child choose a category of ads for making records. Make sure that all areas that the group thinks are important are covered by at least one student.

FOOD AD RECORD SHEET

Name of Advertised Food	Type of Food and Name of Company	Where Found Examples: TV, radio, billboard, magazine, newspaper (If TV, list when seen)	Brief Description Including how women, children, aged persons, and people of color are portrayed	Advertising Method Examples: association with ideal qualities, testimonials by famous persons, gimmicks, nonsense words, special qualities, factual comparisons to other products

ACTIVITY SIX

★ useful

What Path Did My Food Take?

Description
Students will create a diagram of the processes studied in this unit, tracing the path of their favorite foods from farm to table. They will write short essays about the steps studied in this unit.

Related Subjects
Art, Writing, Nutrition, Science, Music.

Objectives
1. To review concepts learned in this unit.
2. To serve as an evaluation of concepts learned in this unit.
3. To practice graphically representing a process.
4. To improve writing skills.

Materials
Drawing paper, world map, drawing implements, tape, glue, writing paper, and pens, or pencils.

Procedure
1. Sing "The Bread Song," found at the end of this activity. Discuss.

2. Ask each child to think about her or his favorite food and the path each of its ingredients must travel from where it is grown to where the food is eaten. Make a list on the board of the types of information to include, based on knowledge gained from the activities in this unit. Examples: where and by whom the food was harvested, transported, processed, packaged, stored, advertised, sold, and eaten. Describe the path of one food, perhaps your favorite one, as an example. A sample diagram is shown at the end of this activity.

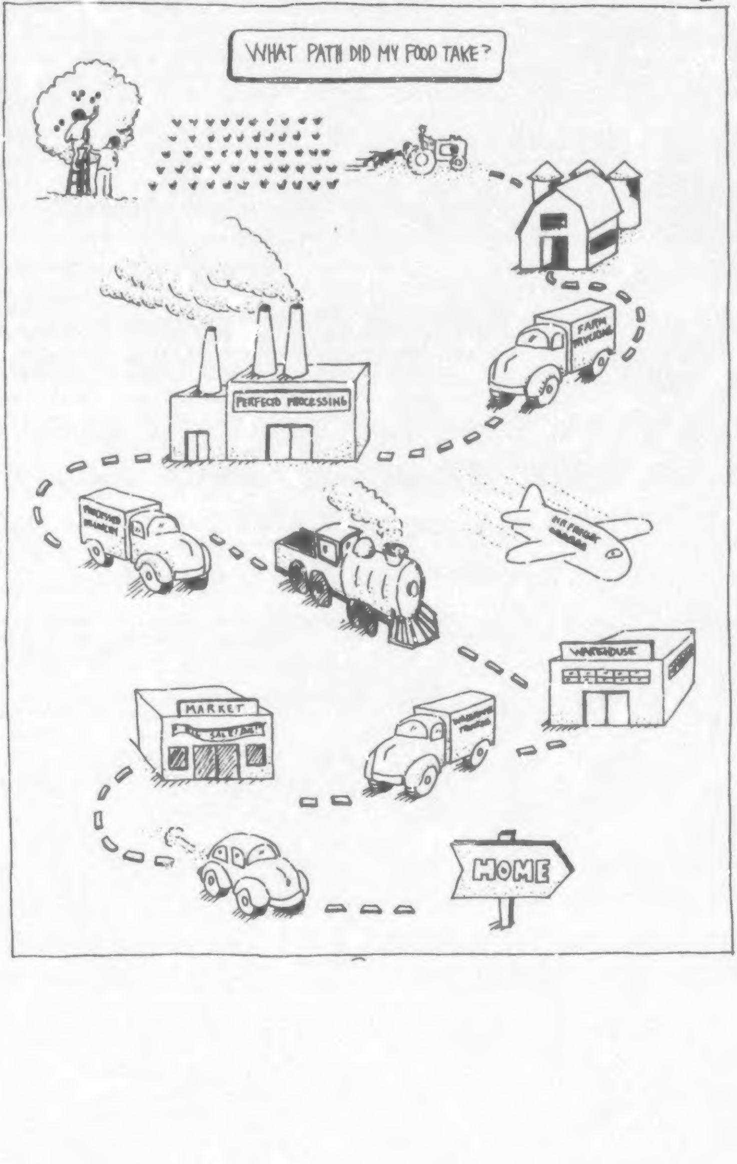
3. Distribute materials. Ask each child to draw, in any style, the path of his or her favorite food. Some may want to show all steps on one piece of paper. Others may choose to draw each step individually and connect them later with tape or by mounting them on a larger piece of paper. Allow for as much freedom and creativity as possible in the arrangement of steps and methods of illustrating.

4. In addition, ask the children to write short essays describing the processes that take place along the path of the food, using information from all the activities of this unit.

5. When everyone is finished, bring the group back together. Have volunteers share their diagrams with the group. Discuss.

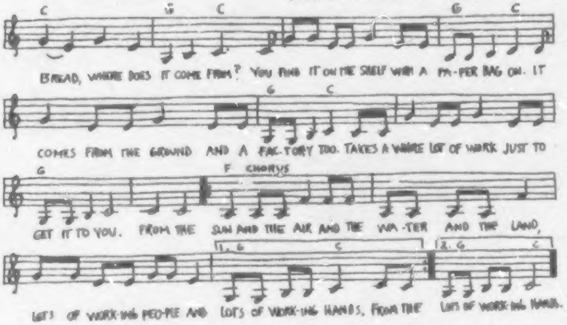
6. Journals—Provide time for the children to put their path diagrams and essays into their journals.

7. Evaluation—Ask students to evaluate on paper what they liked and disliked and what was useful or not useful about the activities in this unit. These evaluations should also be placed in the journals.


WHAT PATH DID MY FOOD TAKE?
FARM
PERFECTO PROCESSING
WAREHOUSE
MARKET
HOME

THE BREAD SONG

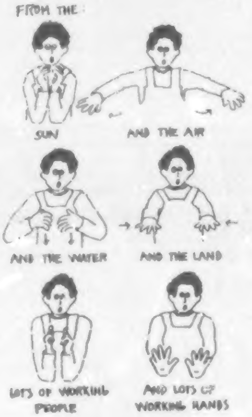
WORDS AND MUSIC BY FRENTE MUSIC COLLECTIVE


C G C G C
BREAD, WHERE DOES IT COME FROM? YOU FIND IT ON THE SHELF WITH A PA-PER BAG ON. IT
G C
COMES FROM THE GROUND AND A FAC-TORY TOO. TAKES A WHOLE LOT OF WORK JUST TO
G F CHORUS
GET IT TO YOU. FROM THE SUN AND THE AIR AND THE WA-TER AND THE LAND,
1. G C 2. G C
LOTS OF WORK-ING PEO-PLE AND LOTS OF WORK-ING HANDS. FROM THE LOTS OF WORK-ING HANDS.

LETTUCE, WHERE DOES IT COME FROM?
YOU FIND IT NEAR THE PICKLE IN THE
HAMBURGER BUN.
SOMEONE PICKS IT FROM THE GROUND.
THAT'S A LOT OF HARD WORK AND A
LOT OF BENDING DOWN. (CHORUS)

HAMBURGER, WHERE DOES IT COME FROM?
YOU EAT IT WITH MUSTARD AND KETCHUP ON.
A COW EATS SOME GRASS AND GETS ALL FAT.
TAKES A FARMER AND A BUTCHER AND A
COOK FOR THAT. (CHORUS)

ICE CREAM, WHERE DOES IT COME FROM?
YOU EAT IT ON A CONE WITH SPRINKLES ON.
IT USED TO BE MADE FROM SUGAR
AND CREAM.
NOW THEY PUT IN JUNK LIKE GASOLINE.
(CHORUS)


FROM THE:
SUN
AND THE AIR
AND THE WATER
AND THE LAND
LOTS OF WORKING PEOPLE
AND LOTS OF WORKING HANDS

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UNIT IV INTRODUCTION

Why Are People Hungry?

Unit IV deals with the root causes of world hunger and contains some of the most important activities in this curriculum. The lessons will help children creatively explore why people are hungry in a world of plenty. They will dispel some of the major misconceptions surrounding hunger, showing that hunger is not caused by too many people or not enough food—rather, hunger is a result of human actions leading to inequalities in the control over food-producing resources. In addition to teaching the causes of hunger, the variety of imaginative activities found in Unit IV will improve children's abilities to think in an independent manner. Background reading for the teacher should include the Food First "Hunger Is Not a Myth" fact sheet.

UNIT GOALS

1. Students will improve their capacities for independent thinking.
2. Children will become familiar with the concept of a root cause of a problem.
3. Students will appreciate the existence of hunger in a world of plenty.
4. Children will learn that hunger is not caused by overpopulation or by scarcity.
5. Students will understand that people are hungry because of inequalities in the control of food-producing resources.

Activity One
"How Does the World Eat" is a key activity that introduces children to the existence of hunger through their participation in a game simulating the distribution of resources to world population.

Activity Two
"Brainstorming the Causes of Hunger" is a useful activity which will stimulate students to think about the root causes of hunger by having them practice brainstorming, a creative group idea-gathering process.

Activity Three
"Voices from a Bangladesh Village" is an important activity that will develop reading comprehension through the reading of firsthand accounts of how hunger affects the lives of villagers in Bangladesh.

Activity Four
"What Do the Numbers Mean?" is an important exercise in which children research and compare population densities to degrees of hunger in countries around the world. The exercise will improve analytical thinking and the ability to read graphs, while dispelling the myth that overpopulation causes hunger.

Activity Five
"Puppets and Population" is a key lesson showing that childbearing can be a rational response to hunger and poverty in some parts of the world. Students will learn to appreciate customs of a variety of cultures while utilizing art and drama techniques with puppets.

Activity Six
"Scrambled Words" is a useful activity that provides closure and serves as an evaluation for concepts learned in Unit IV. Students will utilize analytical thinking to decipher scrambled words and will practice writing skills as they describe what they have learned about the causes of hunger.

Option
1. **Let's Cook a Third-World Food.** As a group, prepare and taste a dish prepared from traditional staple food from somewhere in the third world. Examples: tortillas and beans from Latin America, tofu and rice from Southeast Asia, or cassava from Africa. Find out if there is someone in the class whose family originally came from another part of the world and who would like to bring in a recipe.

ACTIVITY ONE ★ ★ ★ Easy

How Does the World Eat?

Description
The group will be divided up into sections simulating world population divisions and served a snack food divided into portions proportionate to the control of world resources.

Related Subjects
Nutrition, Social Studies, Geography.

Objectives
1. To develop an appreciation for the widespread existence of hunger in a world of bountiful resources, and to understand that scarcity is not the cause of hunger.
2. To become more inquisitive about the causes of hunger.
3. To become familiar with the inequality of distribution of resources.

Materials
World map, and enough of a nutritious snack food to provide every person with a generous snack portion. Examples: graham crackers, fruit slices, peanuts, popcorn, raisins.

Procedure

Note: This activity requires sensitivity on the part of the teacher.

1. In advance, obtain the snack food and divide it up in the appropriate portions simulating world resource distribution. Start with a more than generous portion for each child. Plan to divide the food so that roughly one quarter of the participants will receive either some crumbs or nothing, roughly one quarter will receive a very small portion, roughly one quarter will receive a moderate portion, and roughly one quarter will receive a very large portion. Within the last group you may want to subdivide so that one or two children have even larger portions than the others.

Example: For a group of 24, start with 24 medium- to large-sized apples cut into quarters, for a total of 96 slices.

- 6 persons (25%) will receive nothing or crumbs
- 6 persons (25%) will receive one slice each
- 6 persons (25%) will receive three slices each
- 5 persons (22%) will receive ten slice each
- 1 person (3%) will receive 25 slices

2. Explain to the group that you are going to serve a simulation snack that reflects how much people around the world get to eat. Ask for discussion on the children's ideas on the distribution of food in the world—how many people go hungry and where they live. Do not let individuals or groups of individuals pretend they represent a particular country.It is important to stress that, while the distribution of the snack represents global food distribution, there are hungry people and well-fed people in virtually every country.

3. Ask the participants not to eat until told to do so. Distribute the snack randomly so that children receiving large portions are close to children receiving small portions and to those receiving nothing.

4. Explain how the distribution corresponds to that in the real world. In some countries, such as the U.S., there are a few very rich persons, many middle-income persons, and a smaller number of poor persons who often go hungry. In some countries, such as Sweden, almost everyone has a middle-income level and no one goes hungry. In some countries, such as India, most of the people are poor and often hungry, but there are a few rich persons and a few middle-income persons. In some countries, such as the People's Republic of China, almost all of the people have low to middle incomes, but no one goes hungry.

Allow the children to react to the situation. Let the group try to work out whether it would like to distribute the food more fairly or to eat it as is. If they choose to change the distribution, let them try to design a fair method in their own way. This should be an extremely difficult task. The purpose of this is to give students a feel for how hard it is for people of the world to negotiate fair solutions to problems.

Note: If your group has had a lot of experience working together and cooperating, you may choose to not allow discussions on redistribution of the snack. If this step is done quickly and easily, it would negate the realism of this simulation of the inequalities in the world.

5. Allow the children to eat. Explain the fact that the world produces enough to feed every child, woman, and man the equivalent in calories to what the average person in the U.S. eats every day. Discuss the process—how it relates to the real world and relationships among countries, how the children with the biggest portions feel, how the children with the smallest portions feel, how the real world might be able to equalize the availability of food, and how the distribution of food compares to the children's previous ideas discussed in Step 2.

6. Make it clear to the children that the inequalities in food distribution exist here in the United States and Canada as well as in other parts of in the world. Discuss the existence of hunger in your area, the children's experiences with hungry people, the possible causes of hunger, and possible solutions.

7. Journals—Allow the children to make journal entries on how it felt to be a part of the simulation, and about the existence of hunger in a world of plenty.

ACTIVITY TWO

★ useful

Brainstorming the Causes of Hunger

Description
The group will do a brainstorming exercise on the causes of hunger.

Related Subjects
Social Studies, Nutrition.

Objectives
1. To stimulate the children to think about the causes of world hunger.
2. To give students practice in the process of brainstorming for generating ideas.
3. To help children understand the concept of a root cause of a situation.
4. To demonstrate prior conceptions of the causes of hunger.

Materials
Butcher paper and marking pen.

Procedure
1. Explain to the group that you will be using the process of brainstorming to come up with a list of possible causes of world hunger.

Brainstorming is a process of group idea gathering that stimulates creative thinking. Group members take turns throwing out any and all thoughts that come to mind on a subject while one person records all the ideas. There are no right or wrong answers at this stage. Ideas that may seem to be ridiculous often are the ones that stimulate the best ideas in the end. No one is allowed to criticize any of the ideas. This encourages a free flow of ideas that often leads to a better final product than any other method of idea gathering. When everyone has run out of ideas, the group looks over the list and discusses the possibilities, trying to choose the best, most correct, or most practical idea.

2. Ask someone to be the recorder. Every idea should be recorded on the butcher paper. Choose a process that gives all persons a chance to present their ideas but prevents two or more persons from speaking at one time. Begin the brainstorming by asking for the group's ideas on the causes of world hunger. Explain that the goals are to show what the prior conceptions about hunger are and to stimulate thinking about world hunger. Future activities will show what the causes really are.

3. When all the ideas have been thrown out, ask the group to think about why the ideas listed exist. Explain the meaning of a root cause of a situation. A root cause is an underlying factor that lies at the foundation of a problem.

Examples:

- Problem—A boy has trouble doing math problems in school. Cause—Tiredness, sleepiness. Root cause—The boy's parents often have loud parties that last until late at night, preventing the boy from getting a good night's sleep.

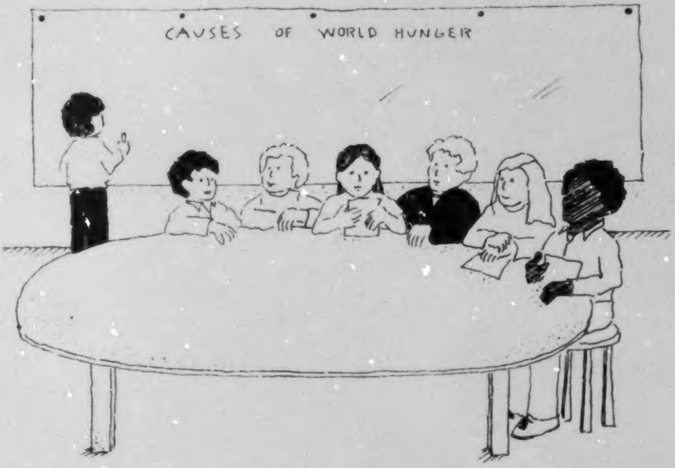
- Problem--A girl cannot answer questions about a story the class was given to read. Cause--She cannot read well enough to understand the story. Root cause—The girl has a sight disorder that has not been detected which prevents her from seeing the words and letters clearly.

4. Continue the brainstorming session by asking the children to contribute possible root causes related to the ideas listed on the butcher paper. Record ideas from this second round in another column. Afterwards, have volunteers draw lines to connect the root causes with the appropriate ideas on the first brainstorming list. This step can be done individually as a homework exercise by having the children copy the list of causes onto one column of a piece of paper. On a second column they should list root causes.

5. Discuss. See if there is any consensus on which of the ideas listed might be the most important in causing hunger.

Note: Save the results of this brainstorming session for discussion after completing Unit V.

6. Journals--Allow time for children to make journal entries about brainstorming, root causes, and the causes of world hunger.



ACTIVITY THREE ★ ★ important

Voices from a Bangladesh Village

Description
Students will read descriptions of persons living in rural Bangladesh and discuss how hunger affects these people.

Related Subjects
Reading, Vocabulary, Geography, Nutrition, Communication Skills.

Objectives
1. To become familiar with hunger's effect on many of the people of the world.
2. To increase awareness of the inequalities of control over land and other food-producing resources.
3. To improve reading comprehension.
4. To practice communications skills necessary to report to a large group.
5. To build vocabulary.
6. To gain knowledge of conditions in Bangladesh.

Materials
Copies of "Shaha Paikur: Landlord, Merchant, and Moneylender," "Abu and Sharifa: Poor Peasants," and "Hari and Komla: Landless Laborers"—enough for one third of the class to receive each one, copies for everyone, or a transparency for an overhead projector of "The Five Classes of Bangladesh Villagers"; paper; pencils; and a world map.

The handouts are excerpted from **Needless Hunger: Voices from a Bangladesh Village** by Betsy Hartmann and James Boyce (San Francisco: Institute for Food and Development Policy, 1980).

Procedure
1. Explain to the group that you will be studying hunger in a Bangladesh village. Ask a volunteer to find Bangladesh on the world map. Discuss what the children know about this country.

2. Distribute the handout, "The Five Classes of Bangladesh Villagers," or show the transparency on the projector. Go over it with the group.

3. Divide the group into three teams. Team 1 will read "Shaha Paikur," Team 2 will be responsible for "Abu and Sharifa," and Team 3 for "Hari and Komla." Each team will read and discuss its description and then be responsible for telling the rest of the group about the persons described. Distribute copies of the handouts appropriate for each team.

4. Allow time for everyone to read the descriptions. Answer questions if necessary. You may want to have the group read together the three descriptions before breaking up into teams to answer the questions and prepare reports.

5. When everyone has finished reading, distribute writing materials as needed. Have the teams meet to quietly discuss their descriptions. They should plan and prepare a team report based on the questions with the stories. Or you may want to have individuals work by themselves to prepare answers to the questions.

6. When the reports are ready, bring the group back together. Start the discussion with Shaha Paikur. Have volunteers take turns presenting information about Shaha Paikur. Next have Team 2 volunteers present information about Abu and Sharifa. Then have Team 3 volunteers report on Hari and Komla. Discuss the different characters, their lives, their work, how their lives relate to each other's, how the stories

compare to those that might be written about villagers in other places around the world, and what group members have learned about hunger.

7. Journals--Provide time for the children to put the descriptions into their journals and to make entries on how hunger affects people in a Bangladesh village.

Modifications
For **younger** students, read the three stories aloud and work out the answers together as a group.

Five Classes of Bangladesh Villages

Based on their different relationships to the land, the villagers of Bangladesh fall into five basic classes:

1. **Landlords** do not work on the land themselves, except sometimes to supervise their workers. Instead they hire labor or let out land to sharecroppers.

2. Rich **peasants** work in the fields but have more land than they can cultivate alone. They gain most of their income from lands they cultivate with hired labor or sharecroppers.

3. **Middle peasants** come closest to our image of the self-sufficient small farmer. They earn their livings mainly by working their own land, though at times they may work for others or hire others to work for them.

4. **Poor peasants** own a little land, but not enough to support themselves. They earn their livings mainly by working as sharecroppers or wage laborers.

5. **Landless laborers** own no land except for their house sites, and sometimes not even that. Lacking draft animals and agricultural tools, they seldom can work as sharecroppers, and must depend upon wages for their livelihoods.

A villager in Katni once said, "Without land, there is no security." Indeed, without land there is often no food.

VOICES FROM A BANGLADESH VILLAGE

SHAHA PAIKUR: LANDLORD, MERCHANT, MONEYLENDER

Shaha Paikur lives with his four wives in a cement house in Dosutari, a village adjoining Katni. He is typical of the local merchants, for he is also a landlord and moneylender. He deals in jute, rice and mustard seed, and his warehouse is large enough to hold the produce of many local peasants as well as that of his own extensive landholdings. When he sells his jute, a caravan of 50 oxcarts carries it to town. Villagers often speculate about his riches, and some claim he buries gold in his courtyard.

Shaha Paikur's moneylending has earned him an unsavory reputation.

"Shaha is clever," a neighbor explains. "When a man falls on hard times, Shaha offers money. He acts so friendly, 'You have no rice? You have no clothes? Here, take this! You can pay me back at harvest time.'

"Men are weak. They know they shouldn't take his money, but they think: 'Let me eat today. Let the future bring what it may.' ... harvest time Shaha is back, demanding payment in rice at half the market rate. When a man cannot repay, Shaha takes his land--he never lends money to a landless man."

"I grow the jute in Shaha's warehouse," said one middle peasant. "Without me, where would he be? What do I get for my labor? Worn hands, aching muscles, and just enough to eat so that I can live to work another day. Meanwhile Shaha sits and eats, and counts his money."

1. Who is described in this story?

2. Which of the five classes of Bangladesh villagers do the persons fit into?

3. How do they make their living?

4. How much land do they own?

5. Would you describe them as wealthy, poor, or in between? Why?

6. Are they hungry? Why or why not?

7. What is the most interesting thing you learned about these persons?

VOICES FROM A BANGLADESH VILLAGE

ABU AND SHARIFA: POOR PEASANTS

Abu and Sharifa live with their six children in a one-room bamboo house with broken walls and a leaky straw roof. They are poor peasants, and year by year they are becoming poorer.

Today Abu and Sharifa own less than one-fifth of an acre of land. Most of this is mortgaged to Mahmud Hazi, a local landlord. Until Abu repays his debt, he must work his own land as a sharecropper, giving Mahmud Hazi half the crop. "I can't even earn enough to feed my family," he says, "let alone enough to pay off the mortgage."

Sharecropping is difficult. "When I work for wages," he explains, "at least we have rice, even if it's not enough to fill our stomachs. But I don't eat from my sharecropping until the harvest. To plow the land I have to rent oxen from a neighbor, plowing his land for two days in exchange for one day's use of his animals. In this country a man's labor is worth half as much as the labor of a pair of cows!"

When Sharifa can find work husking rice, she usually receives only a pound of rice for a day's labor. Often she cannot find employment. "If we had land I would always be busy," she says. She unwraps a piece of betel nut from the corner of her sari. "Without this we poor people would never survive. Whenever I feel hungry I chew betel nut and it helps the pain in my stomach. I can go for days without food. It's only worrying about the children that makes me thin."

1. Who is described in this story?

2. Which of the five classes of Bangladesh villagers do the persons fit into?

3. How do they make their living?

4. How much land do they own?

5. Would you describe them as wealthy, poor, or in between? Why?

6. Are they hungry? Why or why not?

7. What is the most interesting thing you learned about these persons?

VOICES FROM A BANGLADESH VILLAGE

HARI AND KOMLA: LANDLESS LABORERS

"Between the mortar and the pestle, the chili cannot last. We poor are like chilis. Each year we are ground down a little more, until there is nothing left of us."

These are the words of Hari, a Hindu landless laborer who lived in Katni with his wife Komla, their three young children, and a niece whose parents died in the 1974 famine. Their house consisted of a packed mud floor, a sagging straw roof and walls made of a few dried palm leaves hanging from bamboo poles. Inside there was no furniture. Hari did not even own the land on which the house was built.

In the autumn of 1974, Hari and Komla came face-to-face with famine. "I had no work, and we had nothing to eat," Hari recalled. "We begged from house to house, but no one had much to give. One day when I went to town, I saw people fighting over the intestines of a chicken. I saw people selling their children in the bazaar."

"Later the government set up a gruel kitchen in the town. One day I went with my brother Kirot. We waited all day, and each got one roti (a piece of unleavened bread). Who can live on one roti a day? I decided I would rather die here than in town. My wife and I collected wild greens and roots, and when we weren't looking for food, we slept. When the children's cries woke us, we went out again to search for food. Kirot and his wife died at the gruel kitchen. That's why their daughter Gopi lives with us now."

The famine had passed by the time we arrived in Katni, but Hari and Komla were still living dangerously close to the margin. During the planting and harvesting of the crops they could find work, but in the slack seasons they often went for days without a decent meal. Hari's health slowly deteriorated. He was trapped in a vicious cycle: without work he could not eat, not eating made him weak, and because he was weak, employers did not want to hire him.

1. Who is described in this story?

2. Which of the five classes of Bangladesh villagers do the persons fit into?

3. How do they make their living?

4. How much land do they own?

5. Would you describe them as wealthy, poor, or in between? Why?

6. Are they hungry? Why or why not?

7. What is the most interesting thing you learned about these persons?

ACTIVITY FOUR ★ ★ important

What Do the Numbers Mean?

Description
The children will read charts and prepare their own graphs comparing hunger and population density.

Related Subjects
Mathematics, Nutrition, Health, Geography.

Objectives
1. To understand that "overpopulation" does not cause hunger through learning that population density and hunger are not correlated.
2. To become familiar with the concept of infant mortality, a sign of the prevalence of hunger and malnutrition.
3. To improve the ability to read and analyze charts.
4. To develop graphing skills.
5. To increase awareness of global geography.
6. Optional—to become aware of the difference between correlation and causation.

Materials
World map, colored pencils, pencils, and copies for everyone of graph worksheets comparing population density and infant mortality.

Procedure
1. Explain that the class will be doing an exercise on population and hunger. Discuss whether any children think that hunger is caused by too many people. Explain that this is a very common belief in the U.S. and that you will be working through an exercise to show whether this is true or false.

Discuss the meaning of infant mortality. This is a statistic that is frequently used to indicate how much hunger exists in an area. Infant mortality represents the annual number of deaths per 1,000 live births of infants under one year of age. Malnourished and hungry infants and those born to malnourished and hungry mothers are much more likely to die than are well fed babies. Diseases are more likely to strike undernourished babies, and once afflicted with a disease, undernourished babies are more likely to die. Thus, hunger is a major underlying cause of infant mortality.

Make sure that everybody understands that a high infant mortality rate means there is lots of hunger. A low infant mortality rate means hunger is not widespread. Rates of 25 or below can be considered low. Rates of 75 or above can be considered high. Rates of 26 to 74 can be considered moderate. Hunger is commonly found in areas where the infant mortality rate is above the low range of 0 to 25.

2. Discuss the concept of population density.

The population density figures shown in this activity refer to the number of people per hectare of permanently cropped and arable land. One hectare = 2.5 acres. This is approximately the size of a football field. Permanently cropped land has crops which occupy the land for long periods and do not need to be replanted every year. Arable land includes land that is used for temporary crops, temporary meadows, market and kitchen gardens, and temporarily idle land.

Make sure that everybody understands population density. Some countries have many people and a small amount of farmland (example: the Netherlands). Some countries have very few people and much farmland (example: Australia). A population density of 2 or below can be considered low. A density of 7 or above can be considered high. Densities of 3 to 6 can be considered moderate.

3. Distribute the graph worksheets and writing materials as needed. Go over the information about the countries that are already plotted on the graph. Show the children how to plot the information from the chart onto the graph on the worksheet. Each country's point could be plotted in a different color. Underneath the graph the name of the country should be written out and the color used for it should be shown. Show what the graph would look like if population and hunger were positively correlated. A sample graph is shown at the end of this activity.

There are several ways to have a group work through this exercise: as a group, in teams of two to four children, or as individuals.

4. When the graphs are completed, bring the group back together. Discuss the graphs, the countries where many people go hungry, the countries where population is dense, and whether hunger and population density are related.

5. Optional—Discuss the differences between correlation and causation. Correlation means that the incidence of two factors is related in some way. If one of the factors causes the other one, the two will be positively correlated. If the two things are correlated, however, one does not necessarily cause the other. You may want to come up with a list of pairs of factors. Write them on the board and have the children decide whether each pair is correlated and, if so, whether one could cause the other. You may want to have the children write their own examples.

Examples:

- Freckles are found most often in people aged 5 to 12. Measles occur most often in people aged 5 to 12. Freckles and measles are correlated. Freckles do not cause measles. Measles does not cause freckles.
- It snows more in Maine in the winter than in Florida. It is colder in Maine in the winter than in Florida. Snow and cold are correlated. Cold is one of the factors causing snow.
- The density of population varies a lot from country to country. There are hungry people in some countries but not in others. Population density and hunger are not correlated. Population density does not necessarily cause hunger. Hunger does not necessarily cause population density.

6. Journals—Allow time for the children to put their charts and graphs into their journals and make entries about population and hunger.

Modifications

For younger students, do the graphing and answer questions together as a group.

For older students, have them graph additional points from the extended population density list included here. Ask for individual research reports on some of the countries.

Population Density and Infant Mortality in Selected Countries *

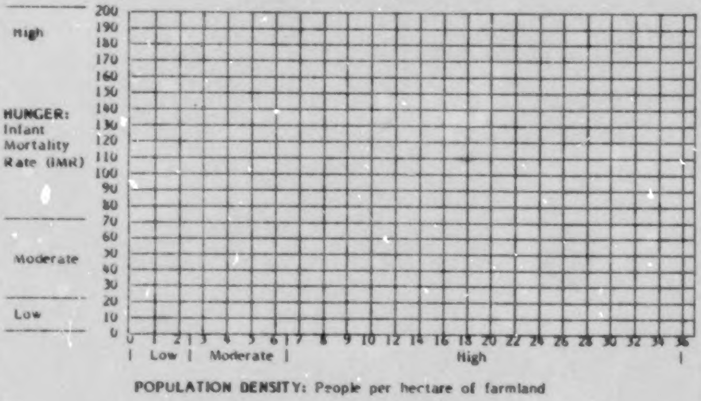
Continent and Country	Population** Density	Ranking	Infant*** Mortality	Ranking
North America				
Canada	less than 1	low	12	low
U.S.A.	1	low	13	low
Central America				
Mexico	4	moderate	70	moderate
Guatemala	4	moderate	76	high
Cuba	3	moderate	25	low
Puerto Rico	21	high	20	low
El Salvador	7	high	51	moderate
Haiti	6	high	130	high
South America				
Brazil	3	moderate	64	moderate
Argentina	1	low	66	moderate
Chile	2	low	40	moderate
Europe				
Sweden	3	moderate	8	low
United Kingdom	8	high	14	low
Poland	2	low	22	low
the Netherlands	16	high	10	low
France	3	moderate	11	low
West Germany	8	high	15	low
East Germany	3	moderate	13	low
Asia				
Israel	9	high	15	low
Bangladesh	9	high	153	high
People's Republic of China	9	high	56	moderate
Japan	23	high	8	low
India	4	moderate	134	high
Saudi Arabia	7	moderate	150	high
Afghanistan	3	moderate	226	high
Sri Lanka	7	high	42	moderate
The Philippines	6	moderate	80	high
Eurasia				
U.S.S.R.	1	low	31	moderate
Africa				
Egypt	14	high	90	moderate
Nigeria	3	moderate	157	high
Ethiopia	2	low	162	high
Zimbabwe	3	moderate	129	high
Sudan	2	low	141	high
Guinea-Bissau	2	low	208	high
Somalia	3	moderate	177	high
Zaire	6	moderate	160	high
South Africa	2	low	97	moderate
Australia				
Australia	less than 1	low	12	low

*Figures for this chart were taken from the 1979 FAO Production Yearbook of the United Nations Food and Agriculture Organization and from the "1980 World Population Data Sheet" of the Population Reference Bureau (Washington, DC).

**Number of people per hectare of permanently cropped and arable land.

***Annual number of deaths per 1,000 live births to infants under the age of one year.

WHAT DO THE NUMBERS MEAN?



INFORMATION FOR GRAPHING

Continent and Country	Density*	IMR**	Color
North America			
1. U.S.A.	1	13	
Central America			
2. Guatemala	4	76	
Europe			
3. Poland	2	22	
4. France	3	11	
Additional Countries			

Continent and Country	Density*	IMR**	Color
Asia			
5. Bangladesh	9	153	
6. Japan	33	8	
Africa			
7. Ethiopia	2	162	
South America			
8. Brazil	3	64	
Additional Countries			

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*Number of people per hectare of permanently cropped and arable land.

**Annual number of deaths per 1,000 live births to infants under the age of one year.

WHAT DO THE NUMBERS MEAN?

WORKSHEET QUESTIONS

1. Which country has the highest infant mortality rate?

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2. Which country has the lowest infant mortality rate?

____

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3. Which country has the highest population density?

____

____

4. Which country has the lowest population density?

____

____

5. Which countries have high infant mortality rates and high density?

____

____

6. Which countries have low infant mortality rates and high density?

____

____

7. Which countries have high infant mortality rates and low density?

____

____

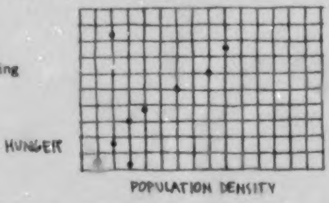
8. Which countries have low infant mortality rates and low density?

____

____

SAMPLE GRAPH

If hunger and population were positively correlated, the graph would look something like this:



9. Does there seem to be a pattern between the two numbers? If so, the points you plotted would look something like a line. Or do the numbers seem unrelated? If so, the points on the graph will be in all different places.

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ACTIVITY FIVE

★ ★ ★ key

Puppets and Population

Description

The children will create their own puppets of members of families from different parts of the world and will contribute to puppet show stories explaining why families around the world decide to have or not to have babies.

Related Subjects

Drama, Reading, Art, Geography.

Objectives

1. To learn that overpopulation is not the cause of hunger; rather, it is an effect of hunger and poverty.
2. To understand that bearing children is a rational response to poverty and hunger in many parts of the world.
3. To appreciate the variety of lifestyles in different cultures.
4. To practice art techniques in creating puppets.
5. To develop drama skills through puppetry.
6. To increase geographic understanding of the location of countries around the world.

Materials

Magazines and books with pictures of people from Asia, Latin America, Africa, Europe (suggested source of materials: U.S. Committee for UNICEF, 331 E. 38th Street, New York, NY 10016), world map, copies for everyone of one of the puppet show script starters (see Step 1 when deciding how many of each script are necessary), puppet-making materials. (There are many ways to make puppets and any way will do for this activity. Materials could include scissors, glue, paper bags, crayons or other coloring implements, felt, yarn, string, colored paper, pins, buttons, socks, needles and thread.)

Procedure

Note: This activity requires a lot of direction from the teacher and takes a considerable amount of time to complete. However, the concepts taught (see Objectives 1 and 2) are extremely important.

1. Explain that the children will be making puppets to represent members of families around the world. Discuss the students' ideas on why parents plan to have children. Have the students choose the area of the world for which they would like to make puppets. Divide the class into teams of two or three children. Each team will create a pair of puppets or three puppets to be the characters of one puppet show skit based on the life of one family from one region of the world. Make sure that there is at least one team designing puppets for each region for which there is a sample script starter. Each team can plan by itself which characters its members will make. You may choose to omit the puppet-making and have the children act out the skits.

Distribute copies of the script starters to the appropriate teams. If the group is large, you may choose to give the same script to more than one team. Or you may want to have larger numbers of people on each team.

2. Have the book and magazine pictures available. Distribute the puppet-making materials. Explain the puppet-making instructions. These will vary depending upon the materials chosen. Paper bag puppets are usually the quickest. Construction paper, yarn, or string can be glued to the bags to create facial features and clothing. Marking pens or crayons can be used to draw on additional details. Provide time for the children to make the puppets.

3. When everyone is finished, set up a puppet stage. This can sit on a table or

desk top.

4. As group leader you may want to begin the puppet snow skits and then allow the children to come behind the stage and take control of the puppets once the skit is in progress. Or the children may be able to start the skits by themselves. Use your judgment.

Use the scripts as starters. These will lay the groundwork for the stories and put across the most important information about why families plan to have babies. Strongly encourage creativity within the skits. Team members should feel free to let their imaginations go, adding characters and lines to each skit.

5. When a puppet show skit is over or starts to drag, start another skit. have another team come to the stage and begin a new story about a family in a different part of the world.

6. Repeat until everyone has had a chance to participate and you have presented skits on all the major regions.

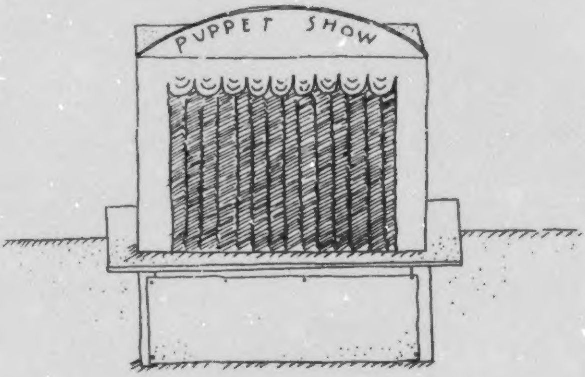
7. Discuss the puppet show skits, how families differ around the world in size, traditions, and lifestyles, how families are similar, why families plan to have babies, why poor parents in many parts of the world need to have large families, why people in other parts of the world usually have small families, and whether males are treated differently than females in the different areas of the world.

8. Journals--Provide time for the students to put their scripts in their journals and to make entries on why people have children.

Modifications

For younger students, limit the activity to two scripts, numbers two and four. Read the scripts together as a group before making a puppet show.

For older students, ask individuals to do research on the five countries other than the United States presented in these scripts or on other countries around the world and to prepare reports on life in these countries.



PUPPETS AND POPULATION
NIGERIA

Setting: Hut in a rural village in Nigeria.
Characters: Mother and Daughter.

Mother: Hello. I am 35 years old. I have been married since I was 15. I have five children. Here is my daughter, Kawe. She is ten years old.

Daughter: Hello, Mother. Have you any work for me to do?

Mother: Yes, Kawe. Perhaps you could help me pound this grain into meal so that we can have it for dinner tonight. We must have this done before the men come back from their work.

Daughter: (pounding the grain by hand) Mother, whatever became of Father's first wife?

M: I do not know, Kawe. She left this village in disgrace when your father divorced her.

D: Why did he divorce her?

M: Because she did not bear a child during the first two years of their marriage. In our society, a childless person is to be despised. Children prove that a marriage is successful. I have helped your father become well respected in this village because I have borne five children. We are especially lucky since three of them have been boys. I am pregnant again now.

D: Why is it important to have boy children?

M: Children are very valuable to our family. As we grow older we will depend on the work of our children to support, feed, and clothe us. Male children are especially important because boys can earn more money at jobs than girls can. We are poor and need all the money we can earn so that we all may eat.

D: My brothers are all at school now, learning skills like reading and writing. Will that help them to get jobs to help support you when you get old?

M: Yes.

D: I bet I could learn those things just as well as they can.

M: I'm sure you could, Kawe. You are a bright girl. But then who would help me farm the fields, pound the grain, and fetch the water? Besides, girls cannot get hired for the same paying jobs that boys can in this area.

PUPPETS AND POPULATION

INDIA

Setting: Home in a rural town in India.
Characters: Mother and Son.

Son: My name is Jaswinder. I live with my mother, my father, my grandmother, and my four sisters. I am seven years old. Two of my sisters are older than I am. Two are younger.

Mother: Hello, my son.

Son: Hello, Mother. How are you feeling?

Mother: I am not very well. I feel a little weak and dizzy. It is hard to be pregnant and carrying another child when there is so much work for me to do. Lately, there never seems to be enough food for me to feel strong and full after you and your father have eaten. There is not much left for me.

S: Why do you feed my father and me before you and my sisters eat?

M: Because that is the custom. You are the most honored member of the family since you are a male child. It is important that you are healthy and strong. Soon you will be helping to earn money for the family and then times will be a little easier for us.

S: I see, Mother. Do you think this baby will live? The last two babies you had never made it to see their first birthday.

M: I do not know, Jaswinder, but I hope so. Because it is so easy for babies to die here I must have many children to be sure that there will be several males who live to strong and healthy. In order for our family to be secure in our old age we will need to have several sons to earn money and take care of us.

S: Don't you love your daughters, too?

M: Oh, yes. I love my daughters! Sons in our society are important because they keep the father's name going and can bring fame and fortune to a family that girls are not allowed to.

S: Someone said that in the cities some girls go to school and even work in factories and hospitals. Is this true?

M: Yes. I have heard that, too. But for now, girls in our small village cannot think of doing these things.

PUPPETS AND POPULATION

CHINA

Setting: An apartment in an urban area in the People's Republic of China.
Characters: Wife and Husband.

Wife: Hello. My name is Mei-Ling. I am 28 years old. My husband's name is Liu. We have been married for one year.

Husband: Hello, Mei-Ling. How are your patients at the hospital?

Wife: Most of them are doing very well, which pleases me. I just found out today that my trip to the countryside to doctor the peasants will take place in two months. I will serve in the country as a doctor for one year and then return to the city.

Husband: I will miss you while you are away. I wish the government did not want you to go and me to stay and work at the factory making clothes. We have loved each other for many years, but our fellow community members did not approve of our marrying until one year ago. There are not many doctors in the countryside, so I know you will be much needed to help with the health of the people there.

W: Yes, Liu. I will be proud to go serve, although I will miss you. Just think, before the Revolution of 1949, the poor peasants had no doctors and almost no medical care. And many of them went hungry. My grandmother has told me that many people were miserable.

H: Yes. Life must have been very hard then. Families tried to have many children so that the young could provide the old with old age security.

W: Now the government assures everybody of food, clothing, and health care. We do not need to have very large families, and our communities try to cause people to have small families to make the population smaller. That is why we waited to marry.

H: That is true. But I would like to have a child or two to make our family more complete. What do you think?

W: I would, too. I wish we could start our family now, instead of waiting until I come back from serving in the country.

PUPPETS AND POPULATION
SWEDEN

Setting: suburban area in Sweden.
Characters: Mother and Son.

Mother: I am 36 years old. My husband and I have one child. My son's name is Jan (pronounced Yon). He is 11 years old. I am meeting him at his school to take him to his ice hockey team practice.

Son: Hello, Mother. Did you just come from working?

Mother: Hello, Jan. Yes, I did. The laboratory I work in was very busy today. Have you been waiting long?

Son: No, only for a little while. Some of the other kids and I were talking about the future and what we would like to do when we grow older.

M: What would you like to do, Jan?

S: I'm not sure. I might like to be an ice hockey player. Or I might like to work for the government and help people like some of the officials we learned about in school. You know, I really liked the actors and dancers we saw in the play at the theater last weekend. Maybe I would like to be one of them. Do you suppose I could take dance lessons?

M: I think so, Jan. If you would like to, let's talk with your father this evening when he comes home from his office.

S: Some of the boys in my class have big families with many brothers and sisters. How come Father and you just have me?

M: Well, your father and I both are very involved in our careers. I do research on cancer at the University Laboratories and your father is an editor at a magazine. Having many children often means that one or both of the parents must give up much work time to help raise the children. Also, both our jobs have pension funds. We know, too, that the Swedish government has a social security system that will care for us when we get older if we have no money. We will not have to depend on our children to support us in our old age.

PUPPETS AND POPULATION

MEXICO

Setting: A small house in a rural area of Mexico.
Characters: Mother and Daughter.

Daughter: My name is Maria. I am 14 years old. Next week I will be married to Carlos, who lives in my village. He is 18 years old. I love him.

Mother: Hello, Maria. Are you dreaming about your wedding again?

Daughter: Yes, Mother. I was thinking about the type of family Carlos and I will have. I think he would like to have a large family. Sometimes I think I might like to have only a few children so that I might spend some time doing the pottery that I love to do. It seems that you spend all of your time working to take care of your five children and my grandparents.

Mother: Yes, I must work day and night to feed and care for you, your three brothers, your sister, your father, and your father's parents. I am 38 years old now and very tired. Maria, you must be careful that you do not anger your husband by talking of having a small family, if he does not want that. In our society it has always been the man's choice of how many children to have in a family.

D: But that is changing a little now. Especially in the cities and for the people who move to the U.S.

M: Still, you must be careful. The law is still written saying that a husband can divorce a wife if she does not produce a son with him.

D: That does not seem fair. It is not necessarily the wife's fault if there are no sons. That's what we learned in school.

M: No, but our society has traditions. Besides, when you live in the country it is very useful to have a large family so that there are many people to labor in the fields at harvest time and bring in money for the family. And, of course, no matter how many children you have you will love all of them dearly.

PUPPETS AND POPULATION
UNITED STATES

Setting: A small house in a city in the U.S.
Characters: Sister and Brother.

Brother (10 years old): Hey, Susan, when do you think Mother will be home from work?

Sister (12 years old): I don't know, Billy. Probably she's going to be late tonight. It's the holiday season and salespeople need to work late at department stores.

Brother: I'm hungry.

Sister: Well, we could try to cook something ourselves for Mother and Father when they come home.

Brother: Some of the kids in my class at school say that in their families both of the parents do not work at the same time. They say they get to see them more of the time.

S: I know. It's the same in my class. Mother once told me that she wished she did not have to work so many hours. She said that Father and she used to think they could work it out so that they both would not work full time at the same time. They wanted to have lots of kids and spend a lot of time with the family.

B: What happened?

S: Mother says it costs so much money to live these days that both Father and she have to work full time just to pay for our food and clothes and the house and stuff.

B: Oh, I guess maybe that means we never will have baby brothers and sisters.

S: I guess not. I guess parents who work in stores and factories cannot have lots of children like our ancestors did who owned a farm.

B: Yeah. Farm kids helped on the farm. There's not much we can do to help with money.

S: Well, we could at least try to help around the house. Maybe we should try to make some food for dinner tonight.

ACTIVITY SIX ★ useful

Scrambled Words

Description
The children will unscramble letters to make words. They will write sentences and paragraphs using the words, based on concepts learned from this unit.

Related Subjects
Vocabulary, Language Arts, Nutrition, Social Studies.

Objectives
1. To serve as an evaluation of concepts learned in this unit.
2. To review concepts used in this unit.
3. To practice analytical thinking.
4. To utilize writing skills.

Materials
Copies for each student of a worksheet with the scrambled words printed on it, paper, and pens or pencils.

Procedure
1. In advance, make worksheets with scrambled words on them. You may want to ask each child to submit one scrambled word that pertains to activities in this unit. Be sure to make the list representative of the words and ideas you explored in your classroom.

2. Distribute copies of the scrambled-words worksheet to all. Work together through a couple of examples. Explain that each group of letters can be turned into a word that relates to the lessons learned about why people are hungry.

Each person should unscramble each word and write a sentence or two about it. If a person sees a relationship between two words, the person may use both words in the same sentence or pair of sentences. After unscrambling all the words, each child should write a one or two-paragraph essay discussing why people are hungry. They should use as many as possible of the unscrambled words. The paragraphs should use information learned during this unit.

3. Allow the children a choice of whether to work individually or in pairs. Ask them to complete the worksheets.

4. Afterwards, go over the words and sentence. Discuss how they relate to why people are hungry.

5. Journals—Provide time for students to put their worksheets in their journals.

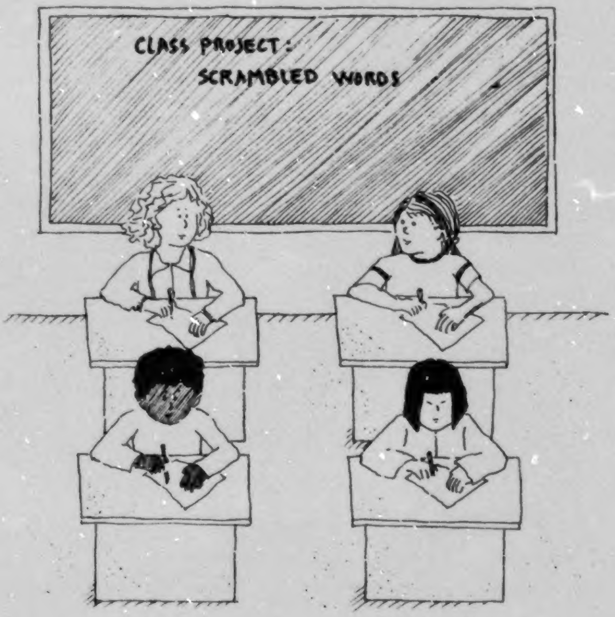
6. Evaluation—Discuss as a group or ask individuals to write down what was useful in the activities in this unit, which activities they liked, and which ones they disliked.

Modifications
For younger students, use a simpler list of words such as land, food, farm, eat, rich, poor, hunger, baby, world, die.

For **older** students, add on more complex words such as peasant, paradox, density, mortality, population, consume.

Worksheet key

1. Women, 2. Resource, 3. Power, 4. Scarcity, 5. Control, 6. Grain, 7. Land, 8. Babies, 9. Inequality, 10. Plenty, 11. Poor, 12. Price, 13. Hunger, 14. Root Cause, 15. Work.



SCRAMBLED WORDS

Unscramble the following words:

1. NEWMO ____________
2. EORSUCER ____________
3. WREOP ____________
4. CCTYISRA ____________
5. LORONTC ____________
6. AINGR ____________
7. ADNL ____________
8. SBBEIA ____________
9. LINEQTYUIA ____________
10. TNLEPY ____________
11. ORPO ____________
12. RCEPI ____________
13. GUHNER ____________
14. OTOR ESUAC ____________
15. WKRO ____________

Write a sentence using each unscrambled word. You may use more than one unscrambled word in each sentence.

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____
7. ____
8. ____
9. ____
10. ____
11. ____
12. ____
13. ____
14. ____
15. ____

Write one or two paragraphs describing why people go hungry.

UNIT V INTRODUCTION

Who Is Hungry in the U.S.A.?

This unit looks at the often forgotten poor of our own country. Students will learn about the 34.4 million Americans below the poverty line who often have trouble affording food in a country sometimes called the breadbasket of the world. The activities in Unit V will point out what groups of Americans suffer a disproportionate share of the nation's hunger and poverty.

UNIT GOALS

1. Children will become familiar with the existence of millions of hungry Americans.
2. Children will learn that some groups of Americans suffer a disproportionate share of this nation's hunger—older persons, children, women, and minorities.
3. Children will appreciate that poor, hungry people are people of dignity capable of working to end hunger.
4. Students will learn the meaning of the concepts of prejudice and discrimination and their relationship to hunger in America.

Most of the activities in this unit were created to introduce the majority of Americans who are not poor to the realities of hunger for many other Americans. Teachers working with groups from impoverished backgrounds will need to utilize a somewhat different perspective and may choose to shorten this unit. (For example, you may choose to omit some or all of Activity One, "Making Ends Meet," and Activity Three, "Working and Eating.") Emphasis should be placed on the existence of inequalities in America and on strategies for ending the problems causing hunger and poverty.

Each teacher will need to adapt the lessons to individual environments. The conditions of hunger and poverty and the groups of people suffering vary from rural area to urban area, from region to region, and from town to town. Try to utilize local examples wherever possible.

All teachers will need to be careful with the thrust of the activities on who is hungry in America. It is very important to show children that the groups of Americans who are most often hungry—older persons, children, women, and minorities—are not hungry because there is anything wrong with them as people. It is important to portray poor Americans as persons of dignity, capable and willing to work to free themselves from hunger. Hunger exists due to inequalities that often do not give poor people the options to be able to feed themselves.

Background reading for the teacher should include the Food First Hunger in America Action Alert, available from the Institute.

Activity One

"Making Ends Meet" is an important activity. "Low-income" participants in this game try to "feed their families" for a month, developing an appreciation for the difficulties of living on a poverty budget and utilizing mathematics skills.

Activity Two

"Old and Hungry" is a key activity. Students will read and discuss a striking personal description of the conditions of hungry older Americans.

Activity Three

"Working and Eating" is an **important** exercise in which students will look at unemployment statistics categorized by race, sex, and age to learn which groups of Americans have the most trouble finding jobs and earning money to feed their families. Chart reading abilities and analytical thinking will be improved as the children create their own bar graph.

Activity Four

"Creating a Group Drawing" is a **useful** activity that lets students be imaginative together as they produce a scene detailing the environment of the hungry in America. This will serve as an **evaluation** and a review of the activities in this unit and give children a chance to practice art techniques as well as the art of cooperation.

Options

1. Role Playing Native Americans. Native Americans are at greater risk from hunger and poverty than other groups in the population. To help students discover why, have them research one or more Indian nations in your state. Some children should research traditional ways of life with emphasis on food growing, gathering, and hunting. Also, look for information of the geographic region inhabited by each tribe. Have some children look for information on current conditions of each nation—where the people live, the size of the federal Indian reservation if there is one, their food and agriculture, sources of employment, amount of dependence on government food and income programs, health conditions, and other related topics. One possible resource is the **American Indian Policy Review Commission Final Report** (Washington, D.C.: U.S. Government Printing Office, 1977).

Use the information to create two short role plays. The first will focus on the food self-sufficiency of North America in the past. The second will show how life has changed since the coming of the white people. The skit should depict the poverty of modern Native Americans and their dependence on federal food and income programs through no fault of their own. Other high hunger-risk population groups—blacks, children, women, the elderly—could also be researched for role playing.

2. People Helping People. Take your group to visit several organizations that help hungry people. Some possible categories of organizations: (1) government services such as a food stamp office, a welfare office, or a community action agency; (2) private organizations providing direct services such as a soup kitchen, a food bank, a gleaners' organization, or a community garden program; and (3) self-help groups trying to change conditions causing hunger and poverty such as a neighborhood block organization, a community development corporation, a tenants' rights group, a welfare rights group, or a local political party.

Be sure that at least one of the organizations visited is staffed and run by representatives of the community it serves. When talking to the organization representatives, let them know that you would like them to paint an honest picture of their group for the class, including problems and weak spots. If a field trip cannot be arranged, invite representatives from two or three local groups to come to the classroom as guest speakers.

ACTIVITY ONE ★ ★ important

Making Ends Meet

Description
Students will participate in a simulation game or fill out a worksheet in which they budget their incomes, trying to pay rent, utilities, and food costs for their "families" for a month.

Related Subjects
Mathematics, Nutrition, Reading, Vocabulary.

Objectives
1. To experience the difficulty of paying for housing, heat, and food on a poverty-level income.
2. To use comparative thinking to contrast the food-buying abilities of persons with different incomes.
3. To practice math.

Materials
Pencils, paper money in $5, $10, $20, and $100 denominations, enough for each player to start with the total shown in Step 1. (This money can come from any board game or you can make it yourself.) Rent Receipt Cards—one for each player, Utility Receipt Cards--one for each player. Weekly Food Tickets: Weekly Gourmet Meal Tickets—four for each player, Weekly Moderate Meal Tickets—four for each player, Weekly Subsistence Meal Tickets--four for each player. (Tickets and Receipt cards can be made from any paper or cardboard. The "value" of each depends on the Player Description Category of each Player. See Step 1 to determine how many of each category of Tickets and Receipt Cards are necessary.) Budgeting Worksheet—one for each player, Player Description Sheets—one for each player. (There are four categories of Player Descriptions. See Step 1 when determining how many of each are necessary for your group.) Samples of all needed materials are shown at the end of this activity.

Procedure

Note: This activity can be used as an individual worksheet exercise instead of as a simulation. If you choose to eliminate the simulation game, you will need only one budgeting worksheet and one player description sheet for each player and no Rent Receipt cards, Utility Receipt cards, or Weekly Food Tickets. "Helpers" will not be needed.

1. In advance, prepare the materials for your class. You may want to have the children help you draw and cut the paper money, Weekly Meal Tickets, Rental Receipt Cards, and Utility Receipt Cards. First, plan the number of each item that you will need by determining how many children will be assigned to each game category.

Three people will be needed as Helpers to play the roles of Landlord, Utility Company Representative, and Food Store Worker. You will probably want to be the Food Store Worker yourself or have another older person do this as this role is a little more complex than the others. (It is described in Step 2.) The rest of the group members will be Players.

The Players should be divided into four categories. Each category represents one income level.

Category A: Have one player take the role of Stephen Stephenson, butler/housekeeper for Tom Trueblood, banking executive.

Category B: Have one or two players play the role of Sam Ohito, community college lecturer, husband, and father.

Category C: Have one half of the remainder of the Players play the role of Bertha Brown, fast food restaurant cashier, mother, and head of household.

Category D: Have the rest of the Players play the role of Millie Millichsky, recent widow of a retired shopkeeper. (In a group of 25, two will be Helpers if the teacher is the third Helper, one will play

CHART OF NUMBER AND VALUE OF MATERIALS NEEDED TO PLAY MAKING ENDS MEET

Category	(Number of participants in group of 25)	Number of Dollars of Monthly Income per Player	Dollar Value Monthly Rent Receipt	Dollar Value Monthly Utility Receipt	Dollar Value Gourmet Weekly Meals*	Dollar Value Moderate Weekly Meals*	Dollar Value Subsistence Weekly Meals*
A	1	15,000	2,000	350	350	140	55
B	2	1,500	600	100	150	60	25
C	10	350	175	40	200	80	35
D	10	150	100	25	50	20	10

*4 per Player of each Meal Ticket.

Category A, two—Category B, ten—Category C, ten—Category D.)

Note: This game points out the inequalities in incomes and food-buying abilities in the U.S. Since the focus of the game is on understanding the difficulties of caring for a family on a poverty-level income, the game does not attempt to simulate the actual proportions of Americans in each income category.

2. Explain to the group that you will be playing a simulation game based on budgeting and spending monthly income. Choose three persons to be Helpers. (One may be yourself.) The Landlord will take possession of the Rent Receipt Cards. She or he will be responsible for "selling" these to the Players (one per player; players must pay for rent appropriate to their category). The Utility Company Representative will take the Utility Receipt Cards and be responsible for selling these to the Players (one per player; category of Player and Receipt must be the same). The Food Store Worker will take the Weekly Meal Tickets and be responsible for selling these to the Players (four per player, category of Player and Meal Ticket must be the same)

Randomly divide the other students into Player Categories A to D in the proportions described in Step 1. Distribute a copy of the appropriate Player Description Sheet to each child. Ask the children to read their descriptions. Explain the different roles and answer any questions. Tell the Players to keep the sheets with them in case a Helper needs to see proof of category before completing a purchase.

3. Distribute the paper money to the Players so that each Player receives the correct amount of "monthly income." (If there is surplus money, you may want to give this to the Helpers to use as change.) Explain that each Player is responsible for taking care of his or her "family's" expenses with this sum. Distribute the Budgeting Worksheets (and pencils as needed). Go over these. Make sure all persons understand their roles, the costs of the necessities of rent, utilities, and food for their families, how to fill in the Budgeting Worksheet, and how to purchase the Weekly Meal Tickets, Rent Receipt Cards, and Utility Receipt Cards.

Each Player has the freedom to spend, save, or plan to spend this money in any manner she or he chooses, but the object of the game is to take care of a family's needs for a month.

4. Encourage Players to attempt to balance their budgets by planning them on paper before making any purchases. Prepare the Players for the possibility that some Players may not be able to afford to fill every category while others may have extra money. Begin the game.

5. When everyone has made all the purchases and filled in the worksheets as completely as possible, bring the group back together and discuss. Have one or two

volunteers from each of the four categories go over their worksheets out loud with the group. Compare the different purchases and planned purchases. How did the members of Categories C and D spend their incomes? Were they able to provide a balanced diet for the full four weeks? How did the Players in Categories A and B spend their incomes? What did they plan to do with the money left over? Discuss how the game related to real life, what it would be like to live from month to month on a low income like the persons in Category C and D, what it would be like to live like the family in Category A, why there is so large a range of incomes, and possible ways to end the poverty and hunger of Americans.

6. Journals—Provide time for the children to place their worksheets and descriptions in their journals and to make entries about how it felt to try to budget income and take care of a family.

Action Ideas

(1) Find out about groups in your area that work on issues of concern to low-income people such as tenants organizations, co-op housing advocates, food buying clubs, etc.

(2) Research less expensive sources of food in your area such as food co-ops, food-buying clubs, and direct markets.

Modifications

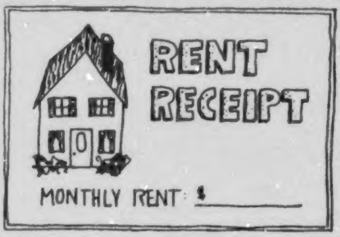
For younger students, provide the cost of monthly meals instead of weekly meals of each type for each category. Modify the Budgeting Worksheet, omitting Nos. 6 to 8 and 14 to 17, and replace with cost of monthly meals.

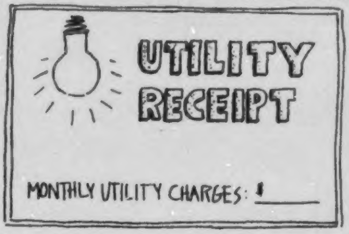
For older students, as a homework assignment ask the group to visit a food store and pretend to shop for a week's worth of food for their families.

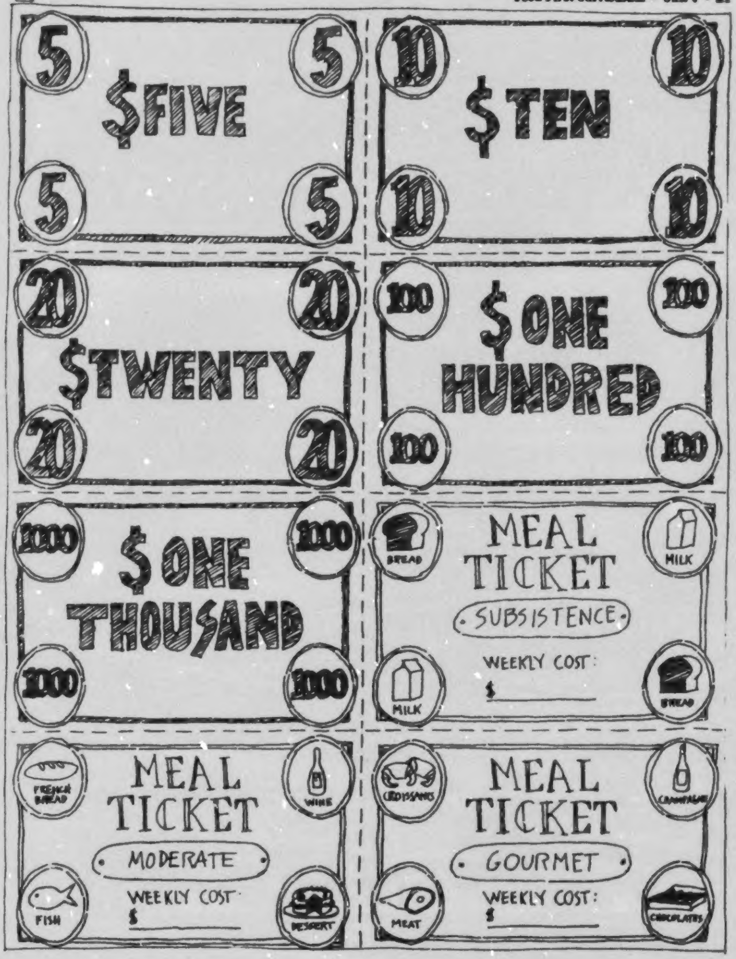
Divide the group into four teams. Each team will represent one family of four. Team A—Migrant farmworkers earning $6,000 a year, weekly food budget $40; Team B—Textile mill workers, $12,000 a year, weekly food budget $55; Team C—Engineers, $35,000 a year, weekly food budget $100 (can afford to spend $40 a week to eat out); Team D—$100,000 a year, corporate executive, no limits on weekly food budget (no limits on money spent to eat out).

Explain that members of each team will be responsible for pricing items and coming up with a food list that could be purchased on one week's food budget.

SAMPLE RECEIPTS, MONEY, AND TICKETS



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MILK
BREAD
FRENCH BREAD
MEAL TICKET
WINE
MODERATE
WEEKLY COST:
$
FISH
DESSERT
CROISSANTS
MEAL TICKET
CHAMPAGNE
GOURMET
WEEKLY COST:
$
MEAT
CHOCOLATES

PLAYER DESCRIPTION SHEET A - STEPHEN STEPHENSON

Pretend you are Stephen Stephenson (35 years old), butler and housekeeper for Tom Trueblood (42 years old), banking executive, and his family. The family includes wife and mother Elizabeth Trueblood (40 years old), who is not employed, and five children: James (15), Susanne (13), Sandra (11), Michael (9), and Patricia (6).

The Truebloods live in a large 20-room condominium in an elegant district of a city. Your job is to attend to the day-to-day household tasks and budgeting for the family.

Budgeting information

1. The Trueblood's monthly income is $15,000.

2. The monthly rent is $2,000. (This is often called a maintenance fee.)

3. Utility charges for one month in the winter are $350. (This includes heat, hot water, and electricity for lights and appliances.)

4. Cost of meals for one week:

- **Gourmet meals** for a week for the family cost $350. (This includes steak, lobster, special desserts, fine wines, imported cheeses, all varieties of vegetables, all types of dairy products, special bakery breads and pastries, all varieties of fruits, and all varieties of meat, fish, and poultry.)
- **Moderately priced meals** for a week for the family cost $140. (This includes ground beef, poultry, cheese, milk, in-season vegetables, in-season fruits, bread, grains, some snack foods, some desserts.)
- **Subsistence meals** for a week cost $55. (This includes potatoes, beans, rice, bread, some soup, occasionally some other food varieties.)

PLAYER DESCRIPTION SHEET B - SAM OHITO

Pretend you are Sam Ohito (34 years old), a part-time teacher at a nearby community college. Your wife Anita Ohito (36 years old) is an engineer. You have one daughter Lisa (10). You and your wife share most of the household responsibilities. You are usually in charge of monthly budgeting. You live in a modern two-bedroom apartment in a suburban area.

Budgeting information

1. The Ohito family's monthly income is $1,500.

2. Monthly rent is $600.

3. Utility charges for one month in the winter are $100. (This includes heat, hot water, and electricity for lights and appliances.)

4. Cost of meals for one week:

- **Gourmet meals** for the family for one week cost $150. (This includes steak, lobster, special desserts, fine wines, imported cheeses, all varieties of vegetables, all types of dairy products, special bakery breads and pastries, all varieties of fruits, and all varieties of meat, fish, and poultry.
- **Moderately priced meals** for the family for one week cost $60. (This includes ground beef, poultry, cheese, milk, in-season vegetables, in-season fruits, bread, grains, some snack foods, and some desserts.)
- **Subsistence meals** for one week cost $25. (This includes potatoes, beans, rice, bread, some soup, occasionally some other food varieties.)

PLAYER DESCRIPTION SHEET C - BERTHA BROWN

Pretend you are Bertha Brown (40 years old), part-time cashier at a fast-food hamburger restaurant. You are divorced. You have three children: Jessica (11), Billy (8), and Leroy (6). You live in a small two-bedroom apartment in an old, run-down section of a large town.

Budgeting information

1. Monthly income is $350.

2. Monthly rent costs $175.

3. Utility charges for one month in the winter cost $40. (This includes heat, hot water, and electricity for lights and appliances.)

4. Cost of meals for one week:
   - **Gourmet meals** for the family for one week cost $200. (This includes steak, lobster, special desserts, fine wines, imported cheeses, all varieties of vegetables, all types of dairy products, special bakery breads and pastries, all varieties of fruits, and all varieties of meat, fish, and poultry.)
   - **Moderately priced meals** for the family for one week cost $80. (This includes ground beef, poultry, cheese, milk, in-season vegetables, in-season fruits, bread, grains, some snack foods, and some desserts.)
   - **Subsistence meals** for one week cost $35. (This includes potatoes, beans, rice, bread, some soup, and occasionally some other food varieties.)

PLAYER DESCRIPTION SHEET D - MILLIE MILLICHSKY

Pretend you are Millie Millichsky (70 years old). You are not employed. You are the widow of a retired shopkeeper who died three years ago. You live alone in a tiny apartment in a decaying section of an old city.

Budgeting information

1. Monthly income is $150.

2. Monthly rent costs $100.

3. Utility charges for one month in the winter cost $25. (This includes heat, hot water, and electricity for lights and appliances.)

4. Cost of meals for two weeks:
   - **Gourmet meals** for one week cost $50. (This includes steak, lobster, special desserts, fine wines, imported cheeses, all varieties of vegetables, all types of dairy products, special bakery breads and pastries, all varieties of fruits, and all varieties of meat, fish, and poultry.)
   - **Moderately priced meals** for one week cost $20. (This includes ground beef, poultry, cheese, milk, in-season vegetables, in-season fruits, bread, grains, some snack foods, and some desserts.)
   - **Subsistence meals** for one week cost $10. (This includes potatoes, beans, rice, bread, some soup, and occasionally some other food varieties.)

BUDGETING WORKSHEET

1. Category____________________

2. Name of role you are playing

____

3. Size of family______________

4. Monthly income______________

Costs of possible expenses

5. Monthly rent ________

6. Monthly utility charges ________

	1 week	4 weeks
7. Cost of gourmet meals	______	______
8. Cost of moderate meals	______	______
9. Cost of subsistence meals	______	______

Note: you have the choice of buying four weeks of one type of meal or buying different types of meals each of the four weeks.

Planned Expenses for One Month

10. Rent __________

11. Utilities __________

Meals:

12. Week 1: Type________________ Cost __________

13. Week 2: Type________________ Cost __________

14. Week 3: Type________________ Cost __________

15. Week 4: Type________________ Cost __________

16. Total cost of planned expenses __________

17. Monthly income (line 4) __________

18. Less total planned expenses (line 16) __________ (subtract)

19. Money left over for other living expenses __________

20. If you have left-over money, list some of the additional things you might buy. Examples: clothing, movies, books. If you could not afford all items, list the ones you decide not to buy.

ACTIVITY TWO ★ ★ ★ key

Old and Hungry

Description
Children will read and discuss a personal account of the life of a hungry aged American.

Related Subjects
Reading, Vocabulary, Nutrition.

Objectives
1. To better understand how hunger affects many aged Americans.
2. To improve reading comprehension.
3. To become familiar with the concept of agism.
4. To build vocabulary.

Materials
Copies for everyone of the story that follows. It is reprinted by permission from Starving in the Shadow of Plenty by Loretta Schwartz-Nobel (New York: The Putnam Publishing Group, 1981).

Procedure
1. Explain to the group that you will be reading and discussing a personal account of a hungry aged American. Discuss the older people students already know or are familiar with and whether or not these people might be hungry. Distribute copies of the story.

2. Ask the children to read the story.

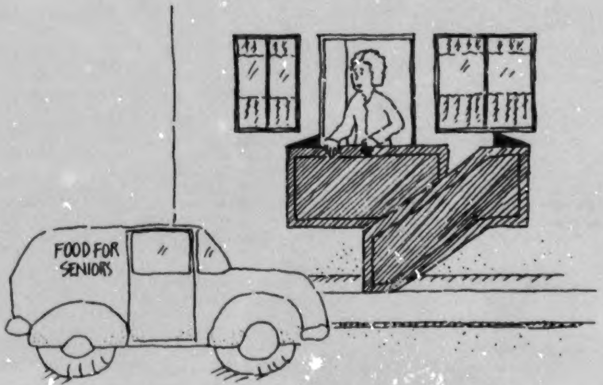
3. When everyone has finished reading, discuss the story, what life is like for older people in the United States, the number of aged persons who go hungry (15 percent of the aged in America live under the poverty line), the causes of their hunger, possible solutions, and other groups of Americans that contain a large proportion of hungry persons.

Have the group consider the fact that there are two general groupings of hungry people. The solutions to each group's hunger will be different. The first group contains able-bodied people who cannot afford to feed themselves either because they cannot find jobs or because their jobs do not pay them well enough to live on. The second group contains people who are not able to feed themselves—the very young, the very old, some very disabled persons, and those who are very ill.

4. Journals--Provide time for putting the stories into journals and making entries about thoughts and feelings about the realities of hunger for aged Americans.

Modification
For younger students, read the story together. You can read it yourself or have the strongest readers help.

OLD AND HUNGRY



An emaciated woman pulled at the edges of a torn gray sweater; her bony fingers were red in the cold. She leaned heavily on the porch railing for support. Her body was still but her large bright blue eyes darted back and forth. Her head turned less quickly, and because she was so thin, the muscles and tendons of her neck stood out. She was waiting for food. As the car eased to the curb below her porch on Weld Hill Street in Boston, the woman began to come down the steps, with what seemed like almost frantic gestures. She was at the door of the car as the director of the Ecumenical Senior Citizens' lunch program turned off the engine.

"How are you today?" the director asked politely, handing her the packaged lunch and starting to close the car door before the woman could respond.

"I'm very weak," the woman said quickly. The words were clipped, the voice high and nervous, with a Boston-Irish accent. Although she spoke well, as a person who was educated, there was fear in her voice and in everything else about her.

At 62, she was almost a living skeleton, her eyes were framed by huge dark circles, but the ashen skin, stretched tightly, still revealed a small, upturned nose and finely shaped lips which made it clear that she had once been beautiful.

"I need help. Will you come back? You must come back," she pleaded, her voice trembling.

"You know that we're very busy and we have a lot of other meals to deliver," the director answered as she turned the key in the ignition.

"I'll come back," I said as the car drove off.

I went back later that afternoon.

The woman explained to me that once she had done civil-service work in City Hall, then had served with the Boston School Committee as a legal secretary.

She lost her job several years ago, and after her unemployment compensation ran out she received welfare for a while. But then the Welfare Department told her that, due to cutbacks in their budget, they could no longer help her. They said she could work, and she said she wants to work, but no one will hire her.

"I've had no income and I've paid no rent for many months. My landlord let me stay. He felt sorry for me because I had no money. The Friday before Christmas he gave me ten dollars. For days I had had nothing but water. I knew I needed food; I tried to go out but I was too weak to walk to the store.

"I felt as if I was dying. I saw the mailman and told him I thought I was starving. He brought me food and then he made some phone calls and that's when they began delivering these lunches. But I had already lost so much weight that five meals a week are not enough to keep me going.

"I just pray to God I can survive. I keep praying I can have the will to save some of my food so I can divide it up and make it last. It's hard to save because I am so hungry that I want to eat it right away. On Friday, I held over two peas from the lunch. I ate one pea on Saturday morning. Then I got into bed with the taste of food in my mouth and I waited as long as I could. Later on in the day I ate the other pea.

"Today I saved the container that the mashed potatoes were in and tonight, before bed, I'll lick the sides of the container.

"When there are bones I keep them. I know this is going to be hard for you to believe and I am almost ashamed to tell you, but these days I boil the bones till they're soft and then I eat them. Today there were no bones."

Upstairs, the old double bed was filled with neatly stacked piles of papers. The woman told me that they were mostly copies of letters she had written to the Social Security office, the Department of Public Welfare, and to local church groups and lawyers, pleading for food. Social workers from local social service agencies claimed that they had done all that they could. They said that they tried repeatedly to help her but that she had failed to qualify or had been unwilling to follow their rules.

I walked into the small clean kitchen and opened the refrigerator. Except for the container with the bit of mashed potatoes left from lunch, it was empty. There was absolutely no food in any of the cupboards.

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QUESTIONS FOR DISCUSSION

1. Why is this woman hungry?

2. Seniors often have more trouble getting enough food than other adults do. Why do you think this is so?

3. Sometimes adults under 65 years go hungry, too. How is their problem different from this woman's? How is their problem the same?

4. Children in the United States are often victims of hunger. How is their problem different from this woman's? How is it the same?

Action Ideas

(1) Write to the Grey Panthers (3635 Chestnut St., Philadelphia, PA 19104) asking about their projects to aid hungry older Americans.

(2) Research food stamps and other government programs for poor people.

(3) Find out what organizations in your community are doing to improve these programs for the aged residents of your area.

ACTIVITY THREE ★ ★ important

Working and Eating

Description
The children will look at unemployment statistics and consider why some groups of Americans have more trouble finding jobs than others, and how this relates to their ability to buy food. Students will complete a bar graph on unemployment.

Related Subjects
Graphing, Mathematics, Nutrition, Social Studies.

Objectives
1. To practice reading charts.
2. To develop analytical thinking.
3. To appreciate that some groups of Americans have more trouble getting jobs than others.
4. To understand the relationship between being employed and being able to buy food for oneself and one's family.

Materials
Copies for everyone of the "Working and Eating Graphing Worksheet." The statistics given come from the U.S. Department of Labor, Second Quarter, 1983.

Procedure
1. Explain that the group will be looking at unemployment statistics broken down by people's race, sex and age. Discuss what unemployment is. Ask for the children's ideas on how unemployment is related to hunger. Explain that most people go hungry because they cannot afford to buy enough food. Being unemployed makes it very hard to have enough money to buy food for one's family. Ask for students' ideas on whether people of different sexes, races, or ages have different unemployment rates.

2. Distribute the graph worksheets. Help the children fill out the bar graph.

3. Discuss the statistics, what types of people have higher rates of unemployment, what types have lower rates, why this might be so, how the inequalities could be remedied, and how more people could be employed. Also, discuss the concepts of prejudice and discrimination.

4. Journals--Provide time for entries on how unemployment and hunger are related and on why some groups of Americans are more often hungry than other groups.

Modification
For older students, discuss these statistics on poverty from the 1980 U.S. census:

Category of People	Below Poverty Line
All	12.1%
White	9.2%
Black	28.9%
Native American	25.6%
Asian/Pacific Island	12.8%
Hispanic	23.1%

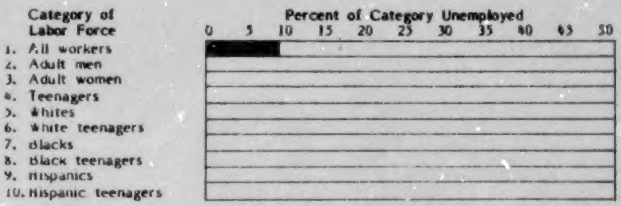
The poverty line is an arbitrary income level developed by the Census Bureau. It is equal to three times a minimum cost emergency food plan. In 1980 a family of four earning less than $8,414 per year (1983, $9,862) was considered to be living below the poverty line.

WORKING AND EATING

People go hungry because they cannot afford to buy adequate food. This worksheet will show that some groups of people are more likely than others to be too poor to buy enough food. People who cannot find jobs often cannot afford to buy enough food. So unemployment and hunger often go together.

A. Use the unemployment statistics to complete the bar graph below.

Category of Labor Force	Percent of Category Unemployed	Category of Labor Force	Percent of Category Unemployed
1. All workers	9.9	6. White teenagers	20.6
2. Adult men	9.4	7. Blacks	20.7
3. Adult women	8.5	8. Black teenagers	51.1
4. Teenagers	23.3	9. Hispanics	14.1
5. Whites	8.8	10. Hispanic teenagers	26.6



B. Study the income statistics below and answer the following questions.

Median Weekly Earnings of Full-Time Employed Persons	Race	Males	Females
	All	$385	$252
	White	$398	$255
	Black	$291	$235
	Hispanic	$275	$223

1. Who earns more—Whites, Blacks, or Hispanics? ____________________
2. Who earns the least—Whites, Blacks, or Hispanics? ____________________
3. Who earns more—males or females? ____________________
4. Why do you think there is such a big difference in incomes? ____________________

____

____

____

ACTIVITY FOUR ★ useful

Creating a Group Drawing

Description
The group will create together a scene involving people who go hungry in the United States.

Related Subjects
Art, Nutrition, Social Studies.

Objectives
1. To serve as a review and an evaluation of concepts learned in this unit.
2. To clarify perceptions of the existence of hunger in America.
3. To practice collaborating on a project.
4. To use art skills.

Materials
Butcher paper and marking pens or blackboard and chalk, paper, and pencils.

Procedure
1. Explain to the children that they are all going to work together to create a scene depicting who's hungry in America. Review the groups of people who most commonly go hungry in this country, for example: children, seniors, women, Native Americans, Hispanics, Black Americans, and other people of color. The group should decide either to put all the types of people into common scene (for example, a soup kitchen or welfare office) or to work on four or five miniscenes, each showing the surroundings of one group of hungry Americans.

2. Have the group agree on a set of rules for working together on a drawing. Possible rules: (1) Each child will be responsible for drawing one thing that fits proportionately into the rest of the drawing. (2) No more than five children at the drawing at one time. (3) Children should know what they plan to draw before they take their turns. Also, decide on a fair order for children to come up and draw.

3. Start the drawing or have a volunteer start. Give everyone a chance to participate.

4. When the last child has contributed to the scene, discuss the results, how well the picture depicts the scene decided on, and how the process of group drawing worked.

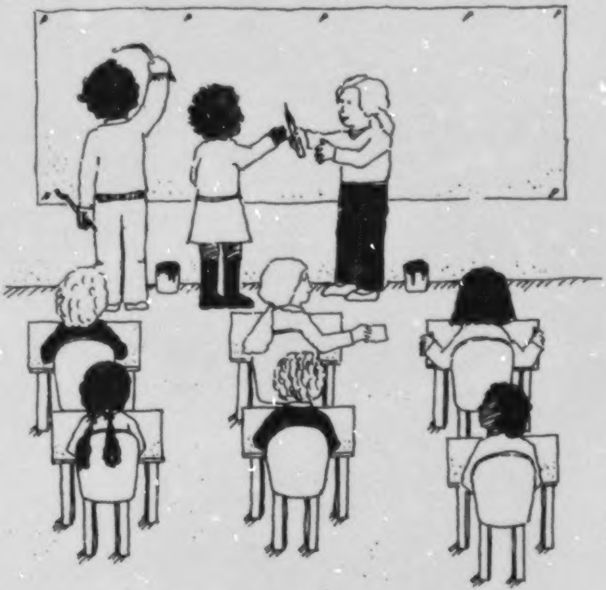
5. Distribute writing materials as needed. Ask each child to write one or two paragraphs on one group of hungry Americans discussing who they are, where they live, why they are hungry, and possible ways to end hunger.

6. Journals—Allow time for the children to put their paragraphs in their journals and to make entries on how it felt to collaborate on a group drawing.

7. Evaluation—Discuss which activities in this unit were useful and which ones the children liked or disliked.

Option

If you have completed Units IV and V, this is a good time to see how the students' perceptions of the causes of hunger have changed over time. Once again, ask the class to brainstorm the causes of hunger. Follow the procedure shown in Unit IV, Activity Two, "Brainstorming the Causes of Hunger." Afterward compare the results with those you saved from Unit IV, Activity Two.



UNIT VI INTRODUCTION

What Can We Do?

Unit VI concludes the **Food First Curriculum** with a positive approach to problem solving. Participating in this unit's activities will acquaint children with examples of positive change caused by ordinary people in our society working together. Students will be encouraged to think for themselves about the world around them, its problems, and visions for its future. They will have a chance to plan practical steps for making changes happen and consider ways to get involved with community groups working to end hunger and improve our food system. Wherever possible, teachers should focus the activities on local situations, local problems, strategies for local improvements, and local community organizations.

In many ways, this unit could be considered the most critical section of the entire curriculum. Thus it is of considerable importance for the teacher to **plan ahead and save adequate time for working on these activities.**

UNIT GOALS

1. Students will be introduced to examples of positive change brought about by everyday people in our society.
2. Children will become familiar with a variety of tactics for causing change.
3. Children will become more self-directed thinkers.
4. Children will understand that it is possible for people working together to end hunger and improve our food system.
5. Students will consider ways that they as

individuals can participate in making changes.

6. Children will understand the concept of self-reliance.

Activity One

"What Do People Think?" is a useful exercise in which students create and distribute a survey questionnaire about our food system. This will improve communication skills and broaden perspectives on the way people in their community think.

Activity Two

"What Does Change Mean?" is a key activity showing children that change can occur. They will learn some historical examples of change and develop original ideas for making changes happen in their own world.

Activity Three

"Is Giving Food the Answer?" is an important activity for older students that will make them question whether giving people food is a solution to hunger. The group will participate in role-playing based on an actual 1976 food disaster in Guatemala following a major earthquake.

Activity Four

"Picture a Self-Reliant World" is an important lesson teaching the concept of self-reliance. Children will utilize creative thinking and art skills to draw a scene from a self-reliant world.

Activity Five

"Tactics of Change" is a set of three useful subactivities. In Activity Five-A, "Educating for Change," the class will choose a topic on which community members need more education and decide on a program to teach this subject. This exercise will teach a broad range of skills for working with people and for organizing work tasks. In Activity Five-B, "Letters Can Make a Difference," students will write letters to business officials and government representatives to encourage changes in our food system. They will learn how effective letter writing can be while practicing business letter composition. In Activity Five-C, "What Does a Boycott Do?" students will research and prepare group teach-ins on current boycotts using information from boycott advocates and from the manufacturers of the boycotted products.

Activity Six

"Planning for a Better World to Live In" is an important activity in which students will create stories on their conceptions of a better world and work in small groups to put together a logical sequence of steps for changing the present world into that world.

Activity Seven

"Affirming Each Other's Efforts for Change" is a key activity. It gives children a chance to think about how they would like to contribute to ending hunger and improving our food system while they practice the technique of affirming their classmates.

Activity Eight

"That's News to Me" is a useful activity in which children will create a group news magazine about our food system. This will help to review concepts learned throughout this curriculum while improving the communication skills used in writing and designing a news magazine. This exercise will help evaluate the children's progress in this unit and throughout the entire curriculum.

Options

1. Visiting Examples of Positive Change. Plan a field trip for your group to sites where people have successfully worked together for change such as a food co-op, farmers market, cooperative bakery, community garden, or cooperative farm. For ideas on alternatives in your area, you might try contacting the publishers of A **Guide to Cooperative Alternatives** (Box 426, Louisa, VA 23093) or asking representatives of local government, people in religious social action committees, or members of nearby political groups.

2. Eating a Local Lunch. Have your group plan, prepare, and eat a meal using locally grown foods. Call or visit local farmers, farmers' markets, or food co-ops to determine what foods are available in that season in your area. This exercise will show the connection between personal actions and improving our food system because buying locally grown foods supports self-reliance.

3. Tying Together Our Interconnected Food System. Ask students to sit in a circle. One by one, have the children contribute one factor affecting whether or not people around the world eat a balanced diet. Each idea should be written on a tag and pinned to the clothing of its contributor. Connect related factors with string. By the end of the exercise you will probably have created a string web demonstrating the interconnectedness of the world food system.

ACTIVITY ONE ★ ★ ★ key

What Do People Think?

Description
The group will create a list of survey questions about food and hunger. Each child will ask several persons in his or her neighborhood to fill out the survey.

Related Subjects
Mathematics, Communication, Social Studies.

Objectives
1. To learn how community members view the world food system and to assess the need for education about food issues.
2. To be able to analyze and compare different persons' perspectives.
3. To develop communication skills by putting together survey questions, disseminating questionnaires, and interpreting the survey results.

Materials
Copies of a survey that the group will design--enough for three or four for each person, pencils.

Procedure
1. Tell the children that they are going to be responsible for creating a survey to find out other people's knowledge and attitudes about food and hunger. Explain that a survey is a study of a sample group of people's ideas and attitudes on a subject.

2. Go around the room and ask each student to contribute possible questions for the survey. Ask a volunteer to record these on the board. The questions should relate to interesting concepts learned in previous activities. Thus, the content of the survey should reflect the activities your class emphasized. Questions from a sample survey are shown at the end of this activity. You can add on to this survey or start a new one.

3. Have the group choose a list of eight to fifteen questions to be used in the survey.

4. Type or carefully write out the survey, leaving spaces for the answers. Make copies so that there are three or four per person in the group.

5. Distribute the surveys. Have each person fill one out. Compare the results.

6. Ask the children to take two or three surveys home and find people in their neighborhoods of any age to answer the questions. Suggest that at least one surveyed person should not be a member of the surveyor's family. Ask that they bring the surveys back to class.

7. When the surveys are returned, compile the results. Make copies for everyone of a synopsis of how the different surveys compare.

8. Distribute the survey results and return each survey to the child who was originally responsible for it. Discuss how people's attitudes differ or are the same, how

attitudes of community members differ from attitudes of group members, how well-informed people seem to be, whether there are any attitudes that the children would like to change, and how these could be changed.

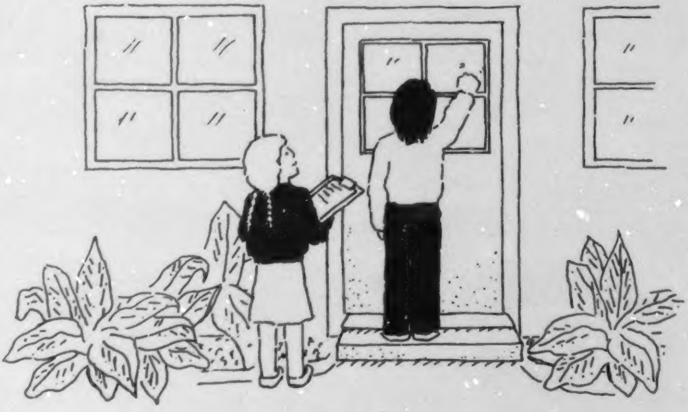
Note: Save at least one copy of the synopsis of results for use in Activity Five-A "Educating for Change."

9. Journals--Give the children time to put their surveys in their journals and to make entries about what other community members think about food and hunger and on what they've learned about doing a survey.

Modifications

For younger students, limit the surveys to five or six questions.

For older students, expand the number of questions to sixteen to twenty. Have each child survey five others, at least two of whom are not family members.



WHAT DO PEOPLE THINK?

Sample Survey

Name ______________________________

Age ____________ Occupation ____________________

1. What proportion of the world's population do you think goes hungry each night?

2. What proportion of the people of the United States do you think goes hungry each night?

3. What is the major cause of hunger?

4. Should all people be guaranteed a healthy diet? Why or why not?

5. Can hunger be ended? How?

6. What do you think is the biggest problem with our food system?

7. What do you think is the best thing about our food system?

ACTIVITY TWO ★ ★ ★ key

What Does Change Mean?

Description
The group will discuss changes members have witnessed, changes they have participated in, and changes they would like to see happen. They will plan a way to make a change occur.

Related Subjects
History, Social Studies, Nutrition.

Objectives
1. To increase awareness of the meaning of change and of the possibility of making changes happen.
2. To learn historical examples of changes made by ordinary people.
3. To develop self-directed thinking.
4. To learn problem-solving techniques.

Materials
Blackboard and chalk, optional—paper and pencils.

Procedure
1. Explain that you will be discussing the meaning of change. Ask the children for definitions of change. If your group works well together in small groups, you may want to divide it into teams of three to five children. Each child will have more chances to participate in the discussions if the small groups quietly discuss the topics independently.

2. Go around the room asking the children to describe changes they have witnessed in the classroom over the year. Then ask about changes they have witnessed in their neighborhood, state, country, and finally, world. You may want to have everyone write these down first and then discuss them—one level at a time. Allow discussion on any type of change, but try to concentrate on changes caused by people.
Note: Younger students may need help understanding the differences among states, countries, and the world.

3. Ask the children to think of changes that were for the better, changes that were for the worse, and changes that were good for some people and not for others.

4. Ask the children to think about situations in which they were recipients of another person's efforts to make changes. Ask them to think about situations in which they were the agents of change. Which type of situation was the most satisfying? Discuss.

5. Present to the group examples of positive change that have occurred due to people working together. Remind them that changes happen because people respond to problems that they see. Give some examples from underdeveloped countries. Point out that wherever there is hunger, one can find people who are working for change. Find out about movements by people in your area and tell of successful efforts by local

farmers, farmworkers, or consumers to improve the food system. Are there some types of people who might not like these changes?

Examples: In the last 25 years the people of China, one-quarter of all the people in the world, have succeeded in virtually ending hunger in their poverty-stricken country. In the 1960s Americans were outraged to discover the existence of more than 30 million hungry people in their own country. These citizens succeeded in convincing Congress to legislate a group of programs (such as food stamps and the Woman, Infants, and Children program) to help people who cannot afford to feed themselves. The Reagan administration has cut back many of these programs.

6. Ask what the children would like to see changed in their classroom or school. Try to focus on situations related to food.

Examples: the degree of waste in the school lunch room, the availability of free meals to children from families with low incomes, the amount of locally grown food being used in the school cafeteria, the quality and quantity of foods served in the cafeteria. (This is a good chance to practice brainstorming as described in Unit IV, Activity Two.)

Make a list on the board of the changes the children would like to see. Have the class prioritize which would be the best ones for the group to work for, keeping in mind the importance of the issues and the practical possibilities of making the changes happen.

7. Have the children come up with a plan of action for one change discussed in Step 6. Allow them to carry through the plan, possibly at a later time.

8. Ask what things the children would like to see changed on a larger scale than within the school. Write these on the board. Try to relate local actions to the changes.

9. Journals--Provide time for the children to make entries in their journals about making changes happen.

ACTIVITY THREE ★ ★ important

Is Giving Food the Answer?

Description
The children will participate in role-plays showing how U.S.-based aid organizations can affect the lives of hungry persons, based on a 1976 food disaster in Guatemala following a major earthquake.

Related Subjects
Drama, Nutrition, Global Studies, Geography, Science.

Objectives
1. To understand that food giving does not prevent hunger in the long run.
2. To realize that givers of aid must be very sensitive to local needs.
3. To appreciate that hungry people are capable and willing to work to free themselves from hunger.
4. To practice the dramatic skills involved in role-playing.
5. To learn some information about the country of Guatemala.

Materials
World map; copies of Directions and Role Description Sheets for each participant in the role-plays. (There are three different role descriptions. The number of each needed depends on the size of the group and how you decide to break down the roles in Step 2. The roles are Guatemalan "Small Farmers Cooperative" members, U.S. "We Give to You—Charity" workers, and U.S. "We Listen to You—Development" workers. Role descriptions can be found at the end of this activity.) Optional—paper, pens, or pencils.

Procedure

Note: This activity may be difficult for younger students to grasp.

1. Explain that you will be role-playing a food disaster that actually happened in Guatemala. Have a volunteer find Guatemala on the map. Discuss what the children know about Guatemala, adding information you feel is relevant. (Guatemala is a small Spanish-speaking nation in Central America with a large Native American population. It is mostly rural and agricultural, producing export crops such as coffee, cotton, bananas, and sugar. The climate is tropical. Much poverty and hunger exist. In 1976 a major earthquake struck Guatemala, causing destruction and havoc.)

2. Divide the group into teams for the role-plays. There will be two role-plays, each involving two teams. The first involves Guatemalan "Small Farmers cooperative" members (ten to fifteen children) and U.S. "We Give to You—Charity" workers (three to five children). The second involves Guatemalan "Small Farmers Cooperative" members (ten to fifteen children) and U.S. "We Listen to You—Development" workers (three to five children). The participants in each role-play will try to solve the Guatemalan people's hunger problem.

3. Distribute the Role Description Sheets for the first role-play. Ask the participants to silently read their roles. The role-play will probably work better if the children keep their role descriptions secret from members of the other team.

4. When all have read their parts, have the members of each team meet with one another to discuss their roles and plan a strategy for interacting with the other team. If possible, have the teams meet in separate rooms. Set a time limit for this session, perhaps ten to twenty minutes.

5. When time is up, end the strategy session. You may want to give a five-minute notice beforehand. Arrange an area for the two teams to meet together and negotiate. Set a time limit for this, perhaps fifteen to twenty minutes. Start the role-play.

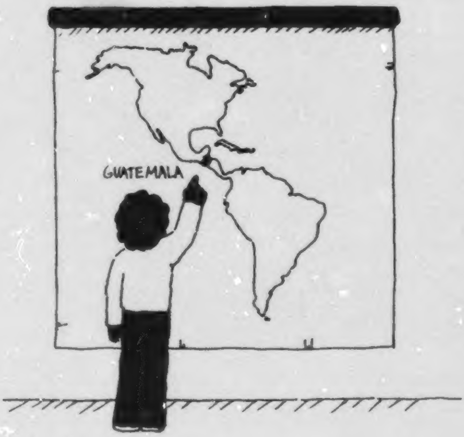
6. When time is up, end the negotiating session. Again, you may want to give five-minute notice. Hold a debriefing session in which participants and observers can discuss the roles, the emotions felt, the dialogue, the results of the negotiating session, and what they've learned about food aid.

7. Repeat Steps 3 to 6 for the second role-play, distributing the Role Description Sheets to the second team of Guatemalan "Small Farmers Cooperative" members and to the U.S. "We Listen to You—Development" team.

8. Afterward, discuss how the two role-plays compared, the differences between the two types of aid organizations, whether or not food giving is effective in lessening or preventing hunger, when it might be appropriate to give food to people, and what types of actions Americans could take that would be most helpful to hungry people in other lands.

9. Optional—You may want to ask the children to write a few paragraphs on what they have learned about aid giving and hunger and on their ideas about how Americans can help hungry people in other lands.

10. Journals—Give the students time to put their role descriptions and their essays in their journals and to make entries on how it felt to participate in the role-play.



IS GIVING FOOD THE ANSWER?

Directions

1. Read your role description. Pretend to be one of the people described.
2. Meet with the other members of your team for a strategy session.
3. Decide how to negotiate with the U.S. aid organization.
4. Choose who will speak and what they will say.
5. Meet with the other team for a negotiation session. The purpose of the role-play is to solve the problem of hunger in Guatemala.

GUATEMALAN "SMALL FARMERS COOPERATIVE" MEMBERS

Role Description

You are all small farmers who have joined together to improve your earnings by sharing tools and information and by helping each other.

Your ages vary from 18 to 60 years old. You all have families to care for. Some of you are men. Some of you are women. Most have many children.

This fall you had an excellent harvest. You stored away many pounds of grain to sell throughout the year.

Your village was just hit by an enormous earthquake. Most of your houses and barns were almost destroyed. Your stores of grain are covered by rubble and debris.

If you could only get to your stored grain, you could feed your family and sell some of the grain to raise money to rebuild your homes.

Most of you no longer have tools with which to dig out your grain.

Your children are hungry because there is not much food available in your village. So are you.

Sometimes people from other countries say they want to help. They act as if they think they know everything, but they seem to have no understanding of what life in your village is really like.

When other people give food away in your village, you cannot find anyone who will pay to buy your grain—even the small amount that you can get to. This makes you poorer and hungrier.

You wish the "Americans" would listen to you. If only they would give you tools so that you could dig out your grain and rebuild your homes! You could tell them which kinds you needed. If they would lend you the money to buy tools, that would help, too. You could repay them after recovering from the earthquake.

U.S. "WE GIVE TO YOU" - CHARITY" WORKERS

Role Description

You are a group of people from all over the United States. Your ages range from 20 to 40 years old. Some of you are men. Some of you are women.

You work for "We Give to You—Charity" because you care about hungry people. You believe giving food to people is the most direct way to end hunger and that "We Give to You" is the best of all the aid organizations. It has been feeding people around the world for 30 years. You came to Guatemala because there has recently been a huge earthquake. It destroyed many homes and farms and caused many people to go hungry.

You think the people of Guatemala are nice, but you do not think they know as much as people from the U.S.A. do. You think Guatemalans should be very grateful for your help. You do not like it when they act displeased or when they try to tell you how to do your job. (After all "We Give to You" has had years of experience and is an expert at its work. These people are only peasants with little education.)

You are kind people. You believe you are doing the most generous kind of work possible.

Your group has brought tons of grain to Guatemala that you plan to feed to as many people as you possibly can.

U.S. "WE LISTEN TO YOU - DEVELOPMENT" WORKERS

Role Description

You are a group of people from all over the U.S. Your ages range from 20 to 40 years old. Some of you are men. Some of you are women. You work for "We Listen to You" because you care about hungry people. You think hunger is unjust and is an outrage because we all live in a world of abundance. You want to help people to feed themselves.

You came to Guatemala because there has recently been a huge earthquake. It destroyed many homes and farms and caused many people to be hungry.

"We Listen to You" tries to listen to the local people wherever it tries to help. You believe that people are the best judges of their own needs. It is your job to use your skills to help these people plan what they need to do. Your organization's money can help these people to accomplish their goals.

You think it is important for the Guatemalan people to share in making the decisions about what your organization will be doing because these decisions will affect their lives.

Your organization has come to Guatemala to do whatever it can to help end hunger for the earthquake victims. It is important to you to see that this is done in the best, most efficient, most practical manner.

ACTIVITY FOUR ★ ★ important

Picture a Self-reliant World

Description
Students will learn about self-reliance and draw pictures of a scene of a self-reliant community.

Related Subjects
History, Art, Geography, Science.

Objectives
1. To appreciate the concept of self-reliance and how it has contributed to American history.
2. To creatively think about self-reliant development.
3. To develop art techniques.

Materials
Drawing paper, drawing or painting materials, and blackboard and chalk or butcher paper and marking pen.

Procedure

1. Discuss the concept of self-reliance. Ask the children to think about historic examples of self-reliant American families and communities. Ask for examples of self-reliance in their own families' lives, such as planting a vegetable garden, home-canning of foods, home-sewn clothes, hand-crafted toys, chopping wood for a wood-burning stove, or doing one's own cleaning or repairing.

2. Contrast the concept of dependence with the concept of self-reliance. Make a two-column chart on the board with the headings: "Self-Reliance" and "Dependence." List each example of self-reliance discussed in Step 1, historic and current.

3. For each example of self-reliance in the first column, have the children give an example of dependence in the second column. These might include eating at a large global fast-food restaurant such as McDonald's, buying fresh vegetables in the winter shipped from South America and sold at a large supermarket chain, or purchasing a shirt from a large chain department store such as Sears that was manufactured in Taiwan by a transnational corporation.

4. When everyone understands self-reliance, ask the children to picture what one community might look like in a self-reliant world. Distribute drawing or painting materials. Ask each child to create a scene from a community in a self-reliant world. Encourage creativity in choices of what to portray and in methods of expression.

5. When everyone is finished, share the drawings with the group. Discuss the scenes, what is displayed, how this relates to self-reliance, and how the scene is different from or similar to communities the children live in.

5. Journals—Allow the children time to put their drawings into their journals and to make entries on self-reliance.

ACTIVITY FIVE ★ useful

Tactics of Change

This activity contains three subactivities, each designed to teach one method that can be used in working for positive change in the food system.

A. Educating for Change

Description
Students will plan and carry out some type of educational program on a topic concerning hunger and our food system.

Related Subjects
Art, Creative Writing, Language Arts, Communication.

Objectives
1. To gain experience in analyzing a need in a community and responding to it.
2. To appreciate the usefulness of education in working for positive change.
3. To improve communication skills.
4. To utilize graphic abilities.
5. To develop organizational skills for working with other people to plan and conduct a program.

Materials
Survey results from Activity One, "What Do People Think?" Blackboard and chalk or butcher paper and marking pen. Other materials will depend on the type of program chosen.

Procedure
1. Explain that the group will be planning and carrying out on an educational program on a topic related to food and hunger. There are many possibilities. The group will choose a topic on which community members (children, adults, or both) need to be educated and will then choose a method for getting across their message.

Possible subjects: food advertising (what it really means), what has happened to America's farmers, why scarcity of food and overpopulation are not the causes of hunger, who is hungry in the U.S.A., or any of the subjects covered by activities in this curriculum. Possible methods: drawing and displaying posters, putting on a play, staging a puppet show, presenting a lecture, holding discussions, compiling and distributing fact sheets. You might want to work Activity Eight, "That's News to Me," into this process.

2. Go over the survey results from Activity One, if available. Choose one child to write the ideas on the blackboard or on butcher paper. Ask the children for possible topics on which to educate other people. (This is a good chance to use brainstorming as described in Unit IV, Activity Two.)

3. Discuss the list of possible topics. Choose one.

4. Discuss possible methods for putting across the message chosen. Again, have one child write down the ideas.

5. Choose the type of program the group will take on. This can be an event that

community members (or fellow schoolmates) are invited to attend or a project that involves distributing information to individuals in the community (or school). Keep in mind time constraints, the skills and abilities of students, and the effectiveness of each possible method of educating others.

6. When the method is chosen, have the group plan the steps necessary to carry it out. Assign children to take part in each of these steps.

7. Prepare and put on the educational program.

8. Afterwards, discuss the process, the program, the success of the task, and the value of education in working for change.

9. Journals—Provide time for journal entries on education as a tactic of change and on how it felt to work on an educational project.

B. Letters Can Make a Difference

Description
Students will write business letters to government representatives and business officials, encouraging changes in our food system.

Related Subjects
Writing, Language Arts, Social Studies.

Objectives
1. To develop communication skills for writing business letters.
2. To appreciate the effectiveness of letter-writing campaigns in bringing about positive change.
3. To express one's feelings about improving our food system to someone who can have an effect on the issue.

Materials
Plain white writing paper or lined paper for writing letters, pens, envelopes, and stamps.

Procedure
1. Explain that the students will be writing letters about changing our food system and sending them to business officials or government representatives. Each child will choose a topic and decide to whom to send the letter. Then she or he will write the business letter. You might want to read examples of letters about change, such as those found in the letters-to-the-editor section of a newspaper.

2. Discuss the possible topics. You may want to have a volunteer record the suggestions on the blackboard. Possible subjects include complaints to corporations about deceptive packaging or advertising; support to corporations about truthful, high-quality packaging or advertising methods; suggestions to U.S. politicians about farm programs, corporate business regulations, food stamps, social security, or one of the many other topics covered in this curriculum.

3. Discuss possible recipients of these letters. Record these, also. These include managers of food manufacturing companies, managers of supermarket chains, the president of the United States, members of the U.S. Senate or House of Representatives, the governor of your state, members of the state legislature, or local government officials.

4. Ask each child to choose a topic on which to write a letter and to decide to whom to send it. Go around the room and

have each child quickly tell his or her plan to the group.

If many children have chosen the same topic, you may want to discuss having all the children write to the same person on the same subject. (Of course, each child would still write an original letter.) Letters sent in large numbers often have greater influence in changing policy.

5. Review the correct form for writing a business letter. Most good language arts books have sections on this. The letters should include:

- Return address
- Date
- Mailing address
- Salutation
- Body
  --Description of problem
  --Who is affected
  --When
  --Where
  --Reason for writing
  --Suggested solution
- Closing

Note: Manufacturing company addresses are usually on their packages. Government addresses can be found in the phone book or by consulting with a reference librarian. Be sure to avoid sexist salutations such as "Dear Sir." Use "Dear Sir or Madam," "Dear Madam or Sir," or "Dear Business Manager," instead.

6. Distribute letter-writing materials. Ask every child to write at least one letter. You may want to have the children write rough drafts first to smooth out content, punctuation, and spelling before making final copies to be mailed.

7. Mail the letters.

8. Provide time for journal entries on letter writing as a tactic of change and how it felt to write a letter about change.

Note: You might want to prepare a bulletin board area for responses to the letters.

C. What Does a Boycott Do?

Description
Students will research current boycotts to learn why people are boycotting specific products and why the manufacturers of the products disagree with the tactic.

Related Subjects
Reading, Nutrition, Science, Geography, Communication.

Objectives
1. To learn what boycotts are and how effective they can be as a method of working for change.
2. To develop research skills.
3. To improve communication skills for presenting information to a large group.
4. To practice comparative thinking.

Materials
Information on several current boycotts from advocates of the boycotts and from manufacturers of the boycotted products (see Step 1 to determine how many copies of each are needed), paper, and pencils.

Procedure
1. In advance, research current boycotts. To do this you might ask representatives from food co-ops, antihunger organizations, or religious social justice committees for suggestions. (The Grapevine is a boycott information newsletter available from 217 S. Hyland Street, Ames, Iowa 50010.) Choose one or two boycotts for your class to study.

Write to the organization advocating each boycott for information on the boycott, reasons for the action, and its effectiveness to date. (Since most of these organizations have low budgets, you might send a donation to cover copying costs if you request multiple copies.) Also, write to the manufacturer of each boycotted product line for information on the product, information on the boycott from their perspective, and a discussion of their labor, manufacturing, and marketing policies. Ask for multiple copies for the class. You may want to have the children themselves write to the companies and the groups which advocate boycotts.

When you have received the boycott information, make sure you have an adequate number of copies of each type of material for your class. If you plan to study two boycotts, divide the class into four teams. Team 1 will research the first boycott from the advocates' information. Team 2 will research the first boycott from the company's information. Team 3—second boycott, advocates' information. Team 4—second boycott, company's information. (If you study only one boycott, only two teams will be necessary.)

2. Explain that you will be learning about boycotts as a method of working for change. Explain that a boycott is a refusal to purchase a company's products in order to express disapproval of the company's actions. The goal is to pressure the company to change its policy. Discuss boycotts with which the children may already be familiar.

3. Divide the group into the appropriate number of teams (as described in Step 1). Distribute paper and pencils as needed and the appropriate set of boycott information materials to each child. Ask each team to read the information and prepare a group presentation to be given to the rest of the class.

4. When the reports are ready, start with the first boycott. Have volunteers from Team 1 present information on the boycott. Then have volunteers from Team 2 report. Allow time for questions and answers. Repeat with the second boycott.

5. Afterwards, discuss each boycott, which side seemed more credible, whether students plan to support the boycott, ways to purchase alternative products, whether students want to get involved in helping to publicize the boycott, whether the boycott seems to be an effective way of making change, and other possible methods of working for change for that particular problem.

6. Journals—Give the children time to make journal entries about the effectiveness of boycotts as a tactic of change and on what they have learned about the researched boycotts.

Suggested boycott to research:

All products manufactured by Campbell's Soup Co. (Camden, NJ 08101) or its subsidiaries. Advocates: FLOC (Farm Labor Organizing Committee, 714-1/2 S. Saint Clair Street, Toledo, OH 43604). Reason: More than 2,000 farmworkers are on strike in tomato fields belonging to growers who have contracted out to Campbell's Soup. They are striking for the right to be recognized as a union. Their problems include low wages, dangerous working conditions, inadequate housing, and child labor practices. FLOC charges Campbell's with preventing negotiations between the processor (Campbell's), the growers, and the farmworkers.

Modification

For older students, organize a debate between individuals or teams researching opposing sides of a boycott.

ACTIVITY SIX ★ ★ important

Planning for a Better World to Live In

Description
The children will write stories describing their conceptions of a better world and prepare a step-by-step plan for the changes necessary to convert the real world into that world.

Related Subjects
Creative Writing, Social Studies.

Objectives
1. To view the future in a positive manner.
2. To organize steps into a logical sequence for completing a task.
3. To practice creative writing.

Materials
Paper, pens or pencils.

Procedure
1. Ask the group to think positively about the future. Have everyone imagine how things would be different in a more ideal world. List on the board some of the aspects they should be considering, such as food, energy, housing, jobs, leisure time, and a system of government. Consider what rights would be guaranteed to all—freedom of speech, the right to free education, the right to eat, or any other rights.

In addition, ask them to think about how people would act—for example, how would they treat each other, what would their goals and ideals be, what kind of work would they do, would they try to work together cooperatively, would they aim to improve their society for everyone's benefit.

Note: You may want to divide the class up into teams of four to eight children to quietly discuss these ideas.

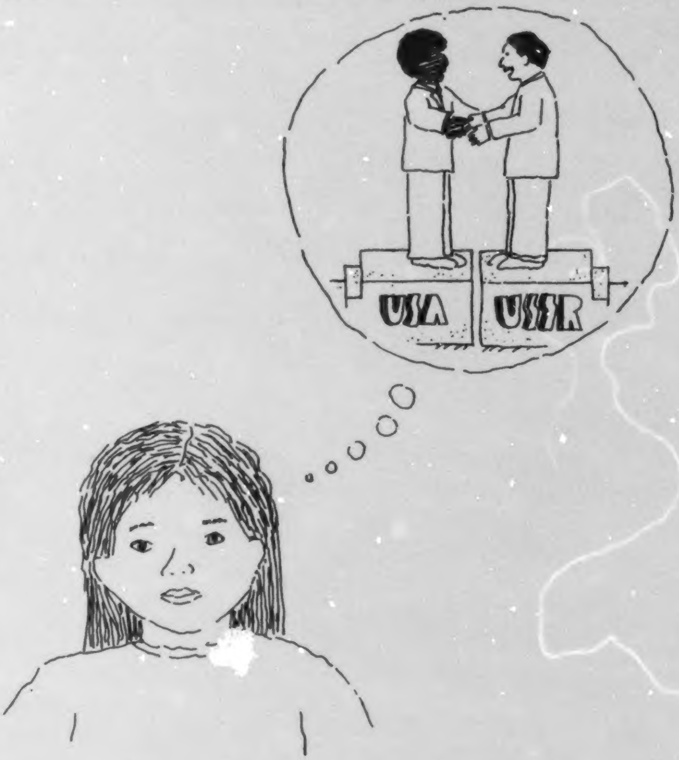
2. Distribute writing materials as needed. Ask each child to write a short story telling about a better world to live in. Encourage creativity in characters and plot.

3. When the stories are finished, bring the group back together. Have volunteers share their stories with the class. Allow time for questions.

4. Explain to the group that students will now plan the changes necessary to convert the present world into a more ideal one. Divide the group into teams of three to five children, grouping students with similar visions of the ideal together. Ask each team to come up with a one-year plan and a long-term plan with a step-by-step list of changes that would need to occur.

5. When all the teams have finished their plans, bring the group back together. Have volunteers share their plans with the group. Discuss.

6. Journal:—Provide time for the children to put their stories and plans into their journals and to make entries on how it felt to make plans with their team.



ACTIVITY SEVEN ★ ★ ★ key

Affirming Each Other's Efforts for Change

Description
Each child will affirm another child by thinking of one thing that she or he would like to give to the other child to help that child work for change.

Related Subjects
Social Studies.

Objectives
1. To learn about and practice affirmation, a process that helps people express positive feelings about each other.
2. To consider changes in which you would like to participate.

Materials
None.

Procedure
1. Have the group sit in a circle. Ask the children to think about a way in which they would like to work for change. Discuss the idea of using whatever you already have and starting where you already are to work for change.

For example, students can work for change by studying topics that will help them build a better world; people who work in factories, offices, or stores can try to make their workplace a better place; families can work to become more self-reliant, democratic, or loving.

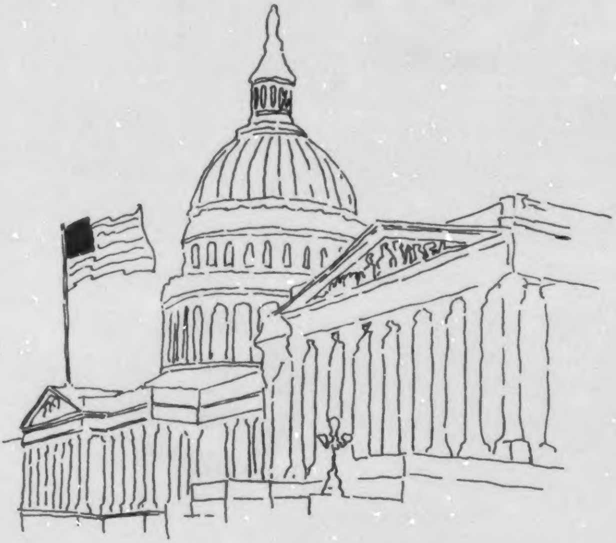
2. Ask one child to describe how she or he would like to work for change. Demonstrate what an affirming response is by saying one thing that you would like to give this child to help him or her work for change. Explain that affirming is a way of sharing positive feelings with someone.

Examples of affirming responses: If someone wanted to help new farmers get a start in farming, someone else might offer to write a letter to a government official asking for legislation to help new farmers buy land. If someone wanted to help residents of an Indian reservation start a food co-op, someone else might offer to help research the history and customs of that tribe. If someone wanted to make the classroom a more cooperative place, someone else might offer to teach the group a game using cooperation.

3. Describe one way you would like to work for change. Have a third person state what she or he would like to give you to help you. Then have this child describe one way she or he would like to work for change and have a different child make an affirming response.

4. Repeat until all children have affirmed someone and described how they would like to work for change. You might want to break the group into circles of six to eight students to do this.

5. Journals—Allow time for journal entries on how it felt to practice affirmation and on thoughts about working for change.



ACTIVITY EIGHT ★ useful

That's News to Me

Description
The group will create a newsmagazine or newspaper about our food system.

Related Subjects
Art, Creative Writing, Nutrition, Geography, Science, Social Studies.

Objectives
1. To serve as an evaluation of concepts learned in this unit and in the entire curriculum.
2. To review information gained from all the activities in this curriculum.
3. To develop the communication/journalism skills of writing, editing, and designing layouts.
4. To practice art techniques.

Materials
Paper, pencils or pens, drawing paper, drawing materials, scissors, glue, two sheets of oaktag, string or yarn, a hole punch, and butcher paper and marking pen or blackboard and chalk.

Procedure
1. Explain that the group is going to publish a newsmagazine or a newspaper about our food system. Help the group make a list on the board of topics that could be covered.

Examples: hunger in the United States, loss of farms, purpose of food advertising, our connection with people around the world, causes of hunger, and solutions to hunger.

You may also want to include fictional sections, humor, comics, and other special features. Place a special emphasis on the information gained from this unit by planning to include a number of articles on people working for change.

2. Have the group decide what topics it will cover and choose a name for the newsmagazine.

3. Match each child to one of the topics. Remember to have someone work on a title page and a table of contents.

4. Distribute the materials. Ask the children to write their parts and/or draw illustrations. Encourage everyone to work together and help each other.

5. When finished, have the children share their work with the group. Discuss.

6. The finished product can be bound together by punching two holes in the left margins of each of the two sheets of oaktag and in each page of the newsmagazine and then tying them together with the yarn or string.

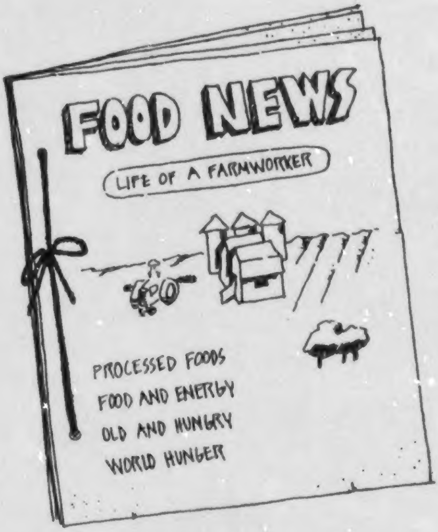
7. If possible, make the finished product available to other classes and other people to help them learn about food and hunger.

8. Journals—Provide time for journal entries about making a newsmagazine.

9. Evaluation:

- Ask the group to think about what has been learned from the activities they have covered in this curriculum. Make a list on the butcher paper of lessons learned, including both skills and information.
- Afterward, ask the children to think about how they could use the information and skills listed. Make a list of these thoughts in another column. Use lines to connect items in the "learned" list with those in the "will use" list.

10. As a final exercise, administer the posttest found on page 5. Compare the posttest results with the original answers to evaluate how students have learned and grown through using this curriculum. Discuss.


FOOD NEWS
LIFE OF A FARMWORKER
PROCESSED FOODS
FOOD AND ENERGY
OLD AND HUNGRY
WORLD HUNGER

Resource Guide

Information for Educators in General

1. Fyson, Nance Lui. **The Development Puzzle.** 6th ed. London: Centre for World Development Education (Parnell House, 25 Wilton Road, SW1), 1979.

This book contains much valuable information on teaching development in schools in a way that will give students a good understanding of third world problems. It has extensive resource lists but little information about the roots of underdevelopment. Solutions other than increased foreign aid are not discussed.

2. Harty, Sheila. **Hucksters in the Classroom: A Review of Industry Propaganda in Schools.** Washington, D.C.: Center for the Study of Responsive Law (available from Education Exploration Center, P. O. Box 7339, Minneapolis, MN 55407), 1979.

This very interesting book explores the expanding role of materials produced by corporations in public school classrooms. Part I reveals the use of corporate materials on nutrition, energy, economics, and the environment. Part II offers specific proposals for reform.

*3. McGinnis, James and Kathleen. **Educating for Peace and Justice.** St. Louis, Mo.: The Institute for Peace and Justice (2913 Locust, 63104), 1980. This is an excellent guide for teachers with information on teaching varying age groups important concepts such as nonviolence, equality, and participation in social justice. The "National Dimensions" section is particularly useful and contains materials on institutional violence, mutual education, racism, agism, sexism, poverty, etc. Other sections are "Global Dimensions," "Religious Dimensions" (from a Christian perspective), and "Teacher Background Readings." There are many additional teacher resources listed.

4. Wolf-Wasserman, Miriam, and Hutchinson, Linda. **Teaching Human Dignity: Social Change Lessons for Everyteacher.** Minneapolis, Minn.: Education Exploration Center (P. O. Box 7339, 55407), 1978.

This is a collection of essays written by and for teachers containing many good ideas for new approaches to teaching. There is an excellent list of resources, such as children's books, media and songbooks, and resource centers.

Teaching Elementary Students

1. Cromer, Judith Kern. **I Cooked It Myself!: Nutrition—A Cookbook/Handbook.** Windsor, Calif.: Resources for Communication (351 Mark West Station Road, 95492), 1980.

This is a beautifully illustrated handbook with nutrition information and easy step-by-step recipes. It provides helpful information on how to cook with elementary school classes.

2. **Food Comics.** San Francisco, Calif.: Educomics (Educomics, P. O. Box 40246, 94110), 1980.

This is a collection of comic strips by different authors including fantasy stories for young children. The other comics are written for secondary school students and adults. Some of the stories are "The Agribiz Game," "Hungry for Fairness" (an excellent look at some of the myths of hunger), and "When Socrates Drinks, Everybody Drinks" (a story on problems with pesticides).

*3. **Children and Ads.** Milwaukee, Wis.: Economic Justice Program of the Justice and Peace Center (1016 N. 9th St., 53233), 1977.

This booklet provides excellent activities for teaching children to analyze advertisements and understand their purpose. There are also short sections on background information for teachers and resources including films, books, and groups.

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* Indicates resources highly recommended by the author.

4. Goodwin, Mary T., and Polden, Gerry. **Creative Food Experiences for Children.** Washington, D.C.: Center for Science in the Public Interest (1755 "S" Street, N.W., 20009), 1980.

This book is full of ways to involve children in activities relating to food. It has sections on the basic food groups, recipes, holiday snacks, how food study relates to other curricula, and additional resources for teachers and children.

5. Kutzner, Patricia L., and Stoerkel, Linda. **Have You Ever Been Hungry? A Church School Curriculum Guide for Grades 3-4, 5-6, and 7-8.** New York: United Church Press (287 Park Avenue South, 10010), 1978.

One of the few resources for elementary teachers that realistically deals with the causes of hunger, this book provides excellent background information for teachers as well as many activity plans. Unfortunately, it does not deal with solutions to hunger other than donations to relief organizations. Much of the material has a Christian focus.

6. Lamy, Steven L. **Comparative World Issues for Grades 1-12.** Denver, Colo.: Center for International Relations (Graduate School of International Studies, University of Denver, 80208), 1981.

This very creative curriculum contains activities geared toward varied age groups on inequality, development and technology, human rights, and human needs. The inequality and human rights sections are particularly useful. Unfortunately, the nutrition lesson does not deal with the roots of hunger.

*7. McGinnis, Kathleen and James. **Parenting for Peace and Justice.** Maryknoll, N.Y.: Orbis Books (10545), 1981.

This beautiful book on educating children has many parts that are just as applicable to classrooms as they are to homes. There are chapters on stewardship/simplicity, nonviolence (very useful), helping children deal with violence in our world, multiculturalization, sex-role stereotyping, social action, and peace. It lays a foundation for having children live a world of democracy, justice, and equality. Some sections deal with Christian religious teachings.

8. Melcher, Joan. **Connections: A Curriculum in Appropriate Technology for the Fifth and Sixth Grades.** Butte, Mont.: National Center for Appropriate Technology (P. O. Box 3838, 59701), 1980.

This well-designed manual contains several activities on food as well as on other areas such as conservation, transportation, and solar energy. It teaches facts well, although there is not much material on social and political issues.

9. Peterson, Diane L. **A Basic Curriculum Guide for School Gardens.** Contra Costa County, Calif.: Cooperative Extension of Contra Costa County, n.d.

This guide for K-8 teachers suggests a procedure for setting up a school garden and integrating this into a traditional curriculum with activities in math, language arts, social science, health/nutrition, and science. The appendix contains charts, diagrams, references, a glossary, and interesting lesson plans.

10. Preusch, Deb and others. **Red Ribbons for Emma.** (1981, New Mexico Energy Collective, New Seed Press, P. O. Box 3016, Stanford, CA 94305.)

This is the story of a Navajo Indian woman who herds sheep in New Mexico. It tells of how a large power company disrupted the ecology of the land and how she and others fought back to preserve their land.

11. Prutzman, Priscilla Burger; Leonard, M.; Bodenhamer, Gretchen; and Stern, Lee. **The Friendly Classroom for a Small Planet: A Handbook on Creative Approaches to Living and Problem Solving for Children.** Wayne, N.J.: Avery Publishing Group, Inc. (available from Children's Creative Response to Conflict Program, P. O. Box 271, Nyack, NY 10960), 1978.

This book offers a wealth of ideas on how to teach cooperation, nonviolence, and other democratic processes to children. It gives suggestions on how to run a classroom and has many excellent activities for teaching communication, conflict resolution, and decision-making skills.

12. **Unlearning Indian Stereotypes: A Teaching Unit for Elementary Teachers and Children's Librarians.** New York: Racism and Sexism Resource Center for Educators Division of the Council on Interracial Books for Children (1841 Broadway, 10023), 1981.

This is an excellent presentation on common stereotypes found in children's literature and suggestions on how to avoid use of American Indian stereotypes. Several teachers give examples of activities developed in their classrooms.

13. **Energy, Food, and You: An Interdisciplinary Curriculum Guide for Elementary Schools.** Washington: Washington State Office of Public Instruction (Office of Environmental Education, Educational School District No. 121), first draft 1977.

This is a large book with many activities for elementary classes on energy and food and some very good lessons on farming, packaging, processing, and advertising. There is much replication of ideas from activity to activity.

*14. Weiss, Ellen, and Pettit, Nance. **Eclipse of the Blue Moon Foods.** Rev. ed. Nashville, Tenn.: Cooperative Food Education Project (2606 Westwood Dr., 37204), 1978.

This excellent and creative publication contains three manuals: **A Guide to Teaching Food Education** is an 18-lesson nutrition unit for fifth and sixth grades; **A Food Education Student Workbook** provides workspace for students; and **A Nutra Trek: That Boldly Goes Where No Families Have Gone Before** is a family pamphlet for good eating and food buying.

*15. Wilson, Wendy, and Jacobson, Michael. **Food Scoreboard.** Rev. ed. Washington, D.C.: Center for Science in the Public Interest (1755 "S" Street, N.W., 20009), 1980.

This highly readable booklet discusses basic nutrition from the perspective of nine- to thirteen-year-olds. Chapters describe members of food categories such as beverages, soups, protein foods, etc. It provides numerical scores corresponding to nutritional quality for many common foods ranging from negative scores for soft drinks to a high score for liver.

*16. **African Studies Handbook for Teachers** 2nd ed. Worcester, Mass.: University of Massachusetts/Worcester Teaching Corps, n.d.

This is an excellent handbook for teaching elementary students an identification with and understanding of African people. Creative classroom-tested lessons deal with preconceptions of Africans, perceiving Africa as a diverse continent, identifying with African children, identifying with Africans experiencing social change, respecting African institutions, and appreciating African art forms. There is a large annotated bibliography.

Teaching Secondary Students

1. **Co-op Food Facts.** Winona, Mich.: Food Learning Center (114-½ E. 2nd Street, 55987), n.d.

This packet contains a set of fact sheets for nutrition education. All the food groups are covered, with information on nutrition, buying tips, storage, eating tips, origins of foods, etc.

2. **The Case of the Sweet Roll: A Nanny Natchez St. Adventure.** Seattle, Wash.: Hunger Action Center (2524 16th Street South, 98144), 1981.

This sharp mixture of script and comic-book illustrations chronicles the adventures of Nanny of Natchez Street, protector of the powerless. In this episode she saves Gus from the ravages of overconsuming sugar and explores the importance of sugar in sweetening corporate profits.

*3. Katz, Deborah, and Goodwin, Mary T. **Food: Where Nutrition, Politics and Culture Meet.** Washington, D.C.: Center for Science in the Public Interest (1755 "S" Street, N.W., 20009), 1976.

This excellent activity book is aimed at junior high through adult levels. Background information is combined with exercises stressing student participation. There are action-oriented sections on eating patterns, nutrition, consumer issues, food supply, hunger in the United States, and world hunger.

*4. McGinnis, James R. **Bread and Justice: Toward a New International Economic Order.** New York: Paulist Press (available from Institute for Peace and Justice, 2913 Locust Street, St. Louis, MO 63108), 1979.

This excellent two-volume set contains

a teachers manual and a textbook for high school students. It suggests creative processes such as role-playing, simulation games, and social actions for teaching about hunger, justice, multinational corporations, trade, and global interdependence. A small proportion of the book deals with Christian religious studies.

5. **Feed, Need, Greed: Food, Resources, and Population: A High School Curriculum.** Rev. ed. Cambridge, Mass.: Science for the People (897 Main Street, 02139), 1981.

This well-designed book, full of lively cartoons, has sections on population and resources, hunger, nutrition, and actions for change. There are some excellent activities. The authors wrote this to "counter ... texts which are clearly proindustry" and use some fairly strong political language. This book could best be used to provide students with an alternative perspective in conjunction with one of the widely available pro-status-quo resources on hunger.

6. **Learning for Change in a World Society: Reflections, Activities, and Resources.** Rev. ed. London: World Studies Project, 1979.

This interesting book provides background for teaching world studies with many ideas for opening student minds.

7. **Study Action Pack for World Development.** New York: United Nations Development Programme (1 United Nations Plaza, 10017), n.d.

This packet is full of interesting information on global development issues. It contains posters, wall charts, flyers, an issue of the **New Internationalist** magazine on the New International Economic Order, and a 40-page newspaper on "Yes, But What Can We Do?" The materials view food, population, energy, unemployment, and the environment as global, related problems. They provide many examples of what people are doing in developed countries around the world to solve global problems.

Teaching Adults (including college students)

1. **Land and Hunger: A Biblical World View** New York: Bread for the World Educational Fund (32 Union Square East, 10163), 1982.

This is a six-session study manual with a leader's guide. It contains simulations, case studies, and discussions. Land reform is the only solution discussed. There are many Christian-oriented passages.

*2. Di Figlia, Gonda. **World Hunger: The Reality, the Causes, What You Can Do, Leaders' Guide and Kit.** Boston, Mass.: Unitarian Universalist Service Committee (78 Beacon Street, 02108), n.d.

This very complete study guide provides an eight-session look at population, colonialism, transnational corporations, agribusiness, food aid, and what you can do. It is based on democratic learning process. One of its strongest points is the presentation of two opposing perspectives on all the issues covered.

*3. **The Politics of Food.** San Francisco, Calif.: Ecumenical Peace Institute (944 Market Street, 94102), n.d.

This resource consists of a study guide and a series of pamphlets for an eight-session study of world hunger. The units promote democratic learning processes and focus on subjects such as colonialism, aid, and population and contain much valuable information.

*4. Moyer, William, and Thorne, Erika. **Food/Hunger Macro-Analysis Seminar.** New York: Transnational Academic Program (1140 Avenue of the Americas, 10036), 1977.

This manual provides a plan for looking at hunger from the local to the international level. It is clearly written and easy to follow. It promotes democratic process and has many action-oriented activities.

5. **Making a Living: Ten Days for World Development 1980: Leaders' Study Action Guide to the Work Issue.** Toronto, Ont.: Ten Days for World Development (Room 315, 85 St. Clair Avenue E., M4T 1M8, Canada), 1981.

This book relates food and work issues to each other. It is a collection of articles on third-world development containing very interesting information. A large section of the book is devoted to Christian religious analyses.

6. **Ten Days for World Development 1981: Making a Living Year II, A Study Action Guide to the Work Issue.** Toronto, Ont.: Ten

Days for World Development (see previous entry), 1981.

This graphically pleasing book contains a series of interviews about work with people around the world such as a teenage Mexican electronic assembly plant worker, a Chad peasant farmer, and a North American steel worker. There are also several other articles on social, political, and economic issues, some of which have a religious education focus. This is very interesting reading material.

7. Van Dreser, Susan. **Hunger Liberation Manual.** Boston, Mass.: Unitarian Universalist Service Committee (see no. 2), 1981.

This is a very good action manual with units on individual and family projects, church and local small-group involvement and state, national, and international projects. It lists a large variety of ways to get involved with hunger on a local level. There are projects for children and advice on monitoring local school-lunch programs, vending machines, and nutrition education classes.

Games

1. **Back to the Farm (that is...a small, organic family farm), A Game About Organic Farming.** Santa Barbara, Calif.: Animal Town Game Co. (P. O. Box 2002, 93120).

This board game is for two to four people ages eight and up about life on a family farm in rural America. Players build their farms up by acquiring nineteen different farm items such as tools, chickens, tractors, etc. A fun learning experience.

2. Fluegelman, Andrew, ed. **The New Games Book.** Garden City, N.Y.: Dolphin Books, Doubleday and Co., Inc. (available from The New Games Foundation, P. O. Box 7901, San Francisco, CA 94120), 1976.

This book has more than sixty games for groups from two to one hundred players. The games value competition but place no importance on winning. The New Games motto is "play hard, play fair, nobody hurt."

Posters

1. Center for Science in the Public Interest, 1755 "S" Street, N.W., Washington DC 20009. They publish a series of bright color posters including:

(a) **Nutrition Scoreboard** is a chart of common foods with nutritional ratings ranging from -38 for jelly beans to +119 for beef liver.

(b) **Chef Pennypincher's Shopping Guide.** One side contains vegetarian recipes, hints on cheap foods, eating tips, information on the food industry, and information on food co-ops. The other side contains a "Test Your Inflation Fighting Skills" quiz.

(c) **New American Eating Guide** contains information on the new four food groups—beans, grains, and nuts; fruits and vegetables; milk products; and poultry, fish, meat, and eggs. There is also information on sweets, fats, snacks, salts, additives, and alcohol.

(d) **Chemical Cuisine.** This chart categorizes food additives into "avoid," "caution," "safe," and explains why.

Records

1. Seeger, Pete. **Folk Songs for Young People.** New York: Folkways Records (63 W. 61st Street, 10023), 1960.

Pete Seeger introduces and sings sixteen folk songs for children about friendship, work, and love. This is an excellent introduction to American folk songs. One of the selections is "The Farmer is the Man."

Audiovisuals

1. **Hamburger U.S.A.** San Francisco, Calif.: American Friends Service Committee (2160 Lake Street, 94121), 1979. 28 min. color slide/tape show.

This is a good show which focuses on economic concentration in the food system of this country and the world and the extent of corporate involvement in our daily lives. After examining each layer of the cheeseburger and some of the social and environmental costs therein, it ends on a hopeful note with suggestions for what we can do. For junior high and above.

2. **Guess Who's Coming to Breakfast.** (rental by American Friends Service Committee, see last entry), 1977. 19 min.

color slide/tape show.

Using the companies which produce breakfast foods as examples, this well-designed show explores the interrelatedness of the world food system. It focuses on the Gulf and Western Corporation's sugar operations in the Dominican Republic's sugar plantations. For upper elementary to high school, probably most effective for junior high and below.

3. **Umoja: Tiger and the Big Wind.** Norwood, Mass.: Beacon Films (12[illegible] Washington Street, 02062), n.d. 8 min. color film.

This is an animated story, written and narrated by William Faulkner, using drawings by children. During a drought, hungry animals find out that by cooperating and working together they need never be hungry again. Excellent. For preschool to lower elementary, high school, and above.

4. **Potatoes.** National Film Board of Canada (distributed by Bullfrog Films, Inc., Oley, PA 19547), n.d. 28 min. color film.

This documentary on potato growers in Canada shows how the multinational corporation McCain controls potato marketing in the area. It shows the profound changes in rural life in North America caused by new agricultural methods, markets, and methods of control. A very good look at the realities of farmers from a farmer's perspective. For high school and above.

5. **A Day Without Sunshine.** (rental from California Newsreel, 630 Natoma Street, 94103), n.d. 60 min. color film.

This excellent documentary depicts the life of Florida farmworkers and contrasts it with the power, size, and profits of the agribusinesses that dominate Florida citrus production. Many interviews with farmworkers themselves are used. For junior high and above.

6. **Supergoop.** Los Angeles, Calif.: Churchill Films (662 N. Robertson Boulevard, 90069), n.d. 13 min. color film.

In this animated story Rodney the Cat, an actor in TV commercials, reveals the process of promoting Soopergoop cereal—the refining away of nutrition from grains, the addition of sugar, and the creation of ads. The ads tell people that eating Soopergoop will help them to be big, smart, popular, and strong and to have fun. Very good. For lower elementary to junior high.

*7. **Seeing Through Commercials.** Milwaukee, Wis.: Justice and Peace Center (1016 N. 19th Street, 53233), n.d. 15 min. color film.

This excellent film shows children how to interpret the commercials they see. An actor dressed as a pirate comes behind the scenes to reveal advertising gimmicks and special effects used to make toys or candy seem better than they are in real life. Camera tricks, sound effects, prizes, and gimmicks are discussed in a very clear fashion. For elementary to junior high.

*8. **When the Almsgiving Stops.** Oakland, Calif.: Key Light (4266 Balfour Avenue, 94610), 1980. 22 min. color slide/tape show.

This beautifully photographed and narrated show presents the political and economic causes of world hunger. By focusing on famine in Bangladesh, it shows that hunger is not a problem of overpopulation, natural disaster, or lack of technology, but rather one of human interactions. Excellent for junior high and above.

9. **Discover America.** Fresno, Calif.: National Land for People (2348 N. Cordelia, 93711), n.d. 40 min. color slide/tape show.

This show provides a good look at the national and international implications of growing food monopolies by focusing on agribusiness's control of federally subsidized irrigation in the fertile San Joaquin Valley of California.

Catalogs and Resource Lists

1. **Alternative Resources for Curriculum Balance.** Washington, D.C.: Center for Study of Responsive Law (P. O. Box 19367, 20036), n.d.

Twelve-page annotated bibliography of education resources in areas where corporate educational efforts predominate: nutrition, economics, energy, environment, consumer education, and citizenship.

2. **Catalog.** Santa Barbara, Calif.: Animal Town Game Co., (P. O. Box 2002, 93120),n.d.

Twenty-eight-page catalog by a small

family game company. It has alternative types of games dealing with Mother Nature, cooperation, simplicity, self-sufficiency, conservation, and human values.

3. **Educating to Justice Lending Library Catalogue** Chicago, Ill.: Archdiocese of Chicago (155 E. Superior, 60611), 1980.

This over-100-page publication has a multitude of resources that can be borrowed by teachers. Some of the categories of resources are justice, food/hunger, power, and global awareness.

*4. **Catalog.** Washington, D.C.: Center for Science in the Public Interest (1755 "S" Street, N.W. 20009), n.d.

This catalog lists the center's books, brochures, and posters on food and nutrition. The CSPI is a nonprofit organization providing the public with reliable yet interesting and understandable information on the effects of technology.

5. **Catalog.** London: Center for World Development Education (128 Buckingham Palace Rd., SW1 W9SH), n.d.

This 14-page catalog is a very extensive list of resources distributed by CWDE. There are books, booklets, information sheets, packets, games, simulations, and audio-visuals listed about development and global perspectives.

6. **Fifth World Tales Catalog.** San Francisco, Calif.: Children's Book Press (1461 Ninth Avenue, 94122), n.d.

More than twenty books of myths, legends, folktales, and stories by contemporary authors are available from this publisher. The stories are for K-6 and were written by people of the Latino, Chicano, Asian, Afro-American, and Native American communities.

7. **Catalog.** New York: Council on Interracial Books for Children (The Racism and Sexism Resource Center for Educators, 1841 Broadway, 10023), n.d.

This 15-page catalog lists books, audio-visuals, curriculums, periodicals, pamphlets, and lesson plans to combat sexism, racism and other antihuman biases in school and society.

*8. **Catalog.** Minneapolis, Minn.: Earthwork/Center for Rural Studies, (3838 Blaisdell Avenue South, 55409), n.d.

This is an extensive list of resources distributed by Earthwork on people, land, and food.

9. **Catalog.** Minneapolis, Minn.: Education Exploration Center, (P. O. Box 7339, Powderhorn Station, 55407), n.d.

This 17x22-inch newsprint sheet catalog lists several books on teaching social change, covering such subjects as Vietnam, controversy in the classroom, corporate involvement in education, and being gay.

10. **Catalog.** Perth, Ont.: Family Pastimes (R.R. 4, K7H 3C6, Canada), n.d.

This 15-page catalog has games for learning about cooperation on subjects such as mountaineering, community house building, space futures, etc.

*11. **Food/Hunger Issues: A Global Perspectives Approach.** Montclair, N.Y.: Global Learning, Inc. (40 S. Fullerton Ave., 07042), n.d.

This 9-page resource list is an excellent annotated bibliography for teachers of texts, books, curriculums, simulation games, kits, audio-visuals, and periodicals.

12. **Brochure.** New York: Global Perspectives in Education, Inc. (218 E. 18th St., 10003), n.d.

This is a list of GPE's publications on culture and area studies, environment, humanities, etc. GPE's purpose is "to provide the kinds of education needed for democratic national citizenship in a global age." GPE also publishes a monthly list of new resources from many publishers; **Clearinghouse Memo.**

13. **Catalog.** Philadelphia, Pa.: Movement for a New Society (4722 Baltimore Avenue, 19143), n.d.

This 4-page list has books on social change, nonviolence, democratic group process, lifestyles, hunger, and global education—all from a radical perspective.

14. **World Hunger:Audio Visual Resource Guide.** New York: National Council of Churches (Coordinating Council for Hunger Concerns, 475 Riverside Drive, Room 868, 10115), 1980.

This 14-page catalog is an excellent guide to audio-visuals on all aspects of hunger with clear descriptions and information on prices and distributors.

15. Fowler, Kathryn Mervine. **Hunger: The World Food Crisis, an NSTA Environmental Materials Guide**. Washington, D.C.: National Science Teachers Association (1742 Connecticut Avenue, N.W., 20009), 1977.

This is an annotated bibliography on food and hunger literature with sections for teachers, 9th—12th, and preschool—9th. There are also guides to films and curricular materials.

16. **Simulation Games for Fourth Grade Through College**. Del Mar, Calif.: Simile II (P. O. Box 910, 92014), n.d.

This 32-page catalog has simulation games for a wide range of ages on a wide range of subjects including decision-making power, future studies, business, etc. It also provides some good information on what simulation games are, how to use them in a classroom, and how to run them.

17. **Catalog**. San Francisco, Calif.: World Affairs Council of Northern California (312 Sutter St., 94108), n.d.

This is a free loan 20-page catalog for teachers with teaching resources on Africa, Asia, Latin America, Middle East, Soviet Union, North America, ethnic studies, and global studies. It includes books, simulations, audio-visuals, etc.

About the Institute for Food and Development Policy . . .

The Institute for Food and Development Policy is a not-for-profit research and educational center which investigates the root causes of hunger and supports the efforts of people around the world who are struggling to create food and farming systems that meet the needs of the majority. Founded in 1975 by Frances Moore Lappé, author of *Diet for a Small Planet*, and Joseph Collins, coauthor with Lappé of *Food First: Beyond the Myth of Scarcity*, the Institute has been hailed as "one of the most established 'food think tanks' in the country" by the *New York Times*.

Internationally reknowned for its groundbreaking research and Food First publications, the Institute looks critically at government and corporate policies asking, "What can we do to create social, economic and political structures that will ensure food security for all?" The Institute has also been credited with playing a key role in shifting the global debate on hunger from a discussion of charity and technological solutions to a recognition that poverty and powerlessness are the root causes of hunger.

In 55 countries and 20 languages Food First studies and publications are helping lay the groundwork for more democratically controlled food and farming systems. Universities and colleges throughout the United States have adopted the Institute's books for courses in development, history, political science, sociology, and geography as well as nutrition and philosophy. Hundreds of labor, church, consumer and activist organizations have found our Action Alerts useful in educating North Americans about hunger in Central America.

For a complete publications list, write: Food First Booklist, Institute for Food and Development Policy, 1885 Mission Street, San Francisco, California 94103.

CALIFORNIA STATE DEPARTMENT OF EDUCATION
721 Capitol Mall
Sacramento, CA 95814

Bill Honig
Superintendent
of Public Instruction

August 3, 1984

The Honorable Mickey Leland, Chairman
Select Committee on Hunger
U.S. House of Representatives
Room H2-507 House Office Building Annex 2
Washington, D.C. 20515

Dear Congressman Leland:

Attached is a revised copy of the testimony presented to the Select Committee on Hunger in Davis, California on July 21, 1984. This version includes the additional remarks made which were not included in the original written version.

Thank you for your efforts with this vital issue.

Best wishes,

Diane Brooks

Diane Brooks, Ed.D., Manager
History-Social Science Unit
Office of Humanities Curriculum
and School Climate
(916)323-0887

DB:lu

Enclosure

CALIFORNIA STATE DEPARTMENT OF EDUCATION
721 Capitol Mall
Sacramento, CA 95814

Bill Honig
Superintendent
of Public Instruction

July 23, 1984

TO: Mickey Leland, Chairman
and members of the Select Committee on Hunger

FROM: Diane Brooks, Manager
History-Social Science Unit
California State Department of Education

SUBJECT: Response to Request for Testimony REVISED 7/21/84

Good afternoon, Mr. Chairman, members of the committee, ladies and gentlemen.

Bill Honig, California Superintendent of Public Instruction, was requested to testify to the Select Committee on Hunger, regarding the subject of world hunger education in elementary and secondary school curriculum. This report responds to the particular requests for information about existing curriculums that include education on world hunger issues, and about prospects for expanding current curriculum to include this subject. It is my pleasure to represent Bill Honig today.

1. Existing Curriculum in California

World hunger issues in grades kindergarten through twelve are most commonly taught through the History-Social Science Framework, a document adopted by the State Board of Education, as a guideline for curriculum development. Textbooks are adopted by the State Board of Education for grades K-8 every six years. Textbook selection criteria include content alignment with the framework. Attached is an excerpt from that framework which describes the grade level content.

Senate Bill 813, 1983, required three courses in social science for graduation from high school (a course is described as one year of instruction). Effective 1987, students shall have instruction in:

U.S. History and Geography;
World History, Culture, and Geography; and
American Government, Civics and Economics

In June, 1983, the State Board of Education adopted Raising Expectations: Model Graduation Requirements which includes aims, objectives, and recommended course content for grades 9-12. These guidelines are in alignment with the graduation requirements of SB 813. The guidelines share similarities with the framework scope and sequence.

Within the guidelines of the framework there is considerable district flexibility for determining the curriculum. As a review: high school course content for graduation is required. The State Board of Education provides direction and districts must use 80% of allocated money for textbook selection for adopted texts. There is considerable district flexibility in emphasis: time, content, how disciplines interrelate.

Following the framework and model graduation requirements, certain grade levels most clearly provide opportunities for instruction in hunger issues.

o Kindergarten - Learning about the physical, social, and emotional dimensions of self and others includes the study of my needs and the needs of others.

o Grade 3 - Students study people as members of communities and how people rely upon one another.

o Grade 6 - The topic of our world, its diverse people and their societies include areas for study about needs which are common to all human beings, and how peoples of the world can and do work together on common concerns.

o Grade 7 - The topic of the changing world provides for a broad chronological view of the major epochs in the history of mankind. Possible areas for study are famine and depression. The study of the geography of the world and how it has changed over time provides for study about climate, weather, agriculture, and the use of resources.

o Secondary World History - The historical perspective provides for study of the development of global interdependence, the everchanging relationships among nations and peoples, and critical events that affect the source of history. The geographic perspectives includes the relationship between physical geography and human geography in terms of the changing spatial distributions of people, their activities, and their interaction with the natural environment. This includes the importance of our abundant resources.

o Secondary U.S. History - The content includes how unlimited wants and the scarcity of resources affect customers, producers, and government. The study of historical development and contemporary roles includes agriculture.

o Secondary American Government, Civics, and Economics - Students study the responsibilities of global citizenship. Economics includes the study of unlimited wants, productive resources, scarcity, supply and demand, and the market economy with the critical importance of agriculture.

Following is additional information pertaining to how subject areas can or should address the hunger issue.

o Comments on geography: Geography links the social and physical sciences. Geography teaches the interrelatedness of humans and their environments.

In recent years, geographers have become increasingly concerned with refining their understanding of spatial patterns of society. They have broadened the discipline to include the studies of problems of human welfare in areas such as hunger.

A basic geographic concept: Any human society must form a workable connection with the earth's resources.

o Comments on history:

In history, each situation and event is distinct, but each is connected to all the historical concepts by a web of cause and effect, probability and accident. All thinking is based, consciously or unconsciously, upon recollection of past experiences.

In order for students to feel a connectedness with current issues and how they relate to where we came from, an historical approach to the hunger issue should be used. The historical perspective links the past to the present to the future. Specific topics could include depressions in U.S. and Russia, famine in Ireland, gross population, limited production, drought, and a look to the future (such as food sources from the sea and hydroponics).

o Comments on economics:

Topics in economics related to the hunger issue include which products and services should be produced, how much should be produced, and how goods and services should be distributed. Students need to understand the following basic concepts:

Scarcity
Interdependence (specialization in products; reduction in self production)
Examination of local, national, and global problems in our mixed society.

Persistence of poverty in a generally productive society.
Needs of current society balanced against future generations essential requirements.
Organization and importance of the international economic system; the distribution of wealth and resources on a global scale; the struggle of the developing nations to attain economic independence and a better standard of living.

This discussion does not even include the instruction provided for students on nutrition through the health or science curriculum.

2. Resources for teaching the hunger issue

Textbooks include the hunger theme in three ways: 1) from an historical approach as a social issue, 2) through the politics of hunger, and 3) through cultural geography, i.e., among the top twelve themes in cultural geography and ecology, hunger is a topic. Cultural geography textbooks frequently include chapters on world hunger; agriculture, productivity, and hunger; and population and hunger.

Support materials, such as filmstrips on the History of Hunger, are available.

The Hunger Project provides for volunteer personnel to meet with school children, upon request of a teacher or school, and present an overview of the issue. The "Ending Hunger Briefing Workbook" is provided free of charge for the students. This resource has been used in several areas of California including Sacramento and Los Angeles.

Food and drug manufacturers, such as Foremost and McKesson, provide instructional materials related to nutrition and hunger. Resources are available. Implementation level varies.

Nutrition curriculum provided by the State Department of Education child nutrition division are available.

Supplementary curriculum materials are available to teachers through Global Perspectives, the World Affairs Council, the Center for Teaching International Relations, and university sources, such as SPICE Stanford and USC.

3. Receptivity of students and teachers in this area

To this point, I have talked about what is possible, now I would like to address the realities of what is occurring in History-Social Science education. Resources are available, however only some districts have a curriculum with this scope and sequence. In school programs, the time spent each day for history-social science varies. It is generally inadequate at the K-8 level, and addressed at the interest of the teacher. Secondary programs vary in topic addressed and units required for graduation. Staff training (either pre-service or continuing in-service) is needed.

A survey was made this week of eleven selected districts throughout California regarding curriculum emphasis at the district and school level. Responses indicated that 1) hunger was not generally included as a curriculum topic in a course of study, and 2) emphasis at the classroom level beyond information in textbooks depended on the interest and knowledge of resources of the teacher. Students are receptive and sensitive to the issue.

The hunger issue was addressed through the health curriculum in two districts.

One district described a well articulated curriculum on this topic. Another was implementing a K-6 pilot program.

4. Prospects for expanding current curriculum

It appears that the framework and the model graduation requirements provide the basis for threading the hunger issue throughout the elementary and secondary grades through several social science disciplines, primarily history, geography, sociology, and ethics. Science health literature can also address the topic. How much emphasis is actually given to the issue is left to the discretion of the local school district.

Where are we going?

Currently, the State Department of Education is carrying out an SB 813, a legislative mandate to develop model curriculum standards to which school districts must compare their curriculum at least every three years. To be included in the point of view to these standards are the importance of addressing issues of regional, national, and worldwide concern (both controversial and non-controversial), and providing opportunities for students to develop their creative and higher level critical thinking skills. This can be organized in a current events program where students report, analyze, interpret, speculate, and discuss information and write critically from a variety of sources, while reflecting on the historical past. Also, history-social science should illustrate that individuals, groups, societies, and nations are interdependent members of larger cultural, political, and economic environments.

The model curriculum standards would provide more specific assistance to districts which will allow for improvement where a well organized curriculum does not currently exist. These standards will be adopted by the State Board of Education by January, 1985. I see these standards as including examples, vocabulary, and topics which will provide direction toward curriculum focus on issues, including hunger. These model curriculum standards, with greater content information, should provide greater content direction for textbook publishers.

In addition, I see schools paying greater attention to the time spent and content of social science as a result of the CAP testing program.

The hunger issue deserves a place in the curriculum along with other important concerns of our time. A well organized curriculum would provide for recurring themes and concepts at gradually more challenging levels for students.

The concern of this committee for greater awareness of the hunger issue through educational programs is appreciated.

I am happy to respond to questions.

Attachment

Selected Settings, by Grade Level

Excerpted from the *History–Social Science Framework for California Public Schools, Kindergarten Through Grade Twelve*, copyright, 1981, California State Department of Education, adopted by the California State Board of Education on January 8, 1981. A complete copy of the *Framework* is available for $2.25, plus sales tax for California residents, from the Bureau of Publications, California State Department of Education, P.O. Box 271, Sacramento, CA 95802.

The term *setting*, as used in this framework, refers to the content or area of study recommended for each grade level. The settings recommended in this framework have been chosen, with regard for these considerations:

- The level of student maturity which can be expected, generally, at particular grades
- The relative importance of the topics suggested
- The need to include topics that are concerned with the student's immediate environments—classroom, playground, home, neighborhood, and community—as well as with the wider state, national, and world environments of which they also are a part
- The desire to provide breadth, depth, and balance in the kindergarten through grade twelve history–social science program

Settings are the content or areas of study recommended for each grade level. They should provide breadth, depth, and balance in the history–social science program.

Users of this framework may wish to add to or enrich the content suggested for particular grade levels. Indeed, they are encouraged to do so, bearing in mind the considerations that have governed the selection of the recommended content.

Kindergarten Through Grade Six

Research documents the importance of the elementary school years in helping children develop positive self-images and prosocial attitudes. For those reasons the time and attention to history–social science should be increased significantly in the common core of the elementary school curriculum. At every level, kindergarten through grade six, history–social science should be an integral part of the curriculum and related to reading, language arts, mathematics, science, art, music, and physical education.

History–social science should be an integral part of the curriculum, kindergarten through grade six, and related to reading, language arts, mathematics, music, art, science, and physical education.

This framework emphasizes the importance of people in the study of history–social science in kindergarten through grade six. Students begin their study of people in kindergarten by learning about themselves and others in their immediate world. They continue their study of people in ever-widening circles: people at home and at school, as members of groups, as members of communities, people in the region known as California, people of the American nation, and finally, at grade six, the diverse peoples of the world and the societies in which they live.

In the course of their study of history–social science, students in the elementary grades need to engage in active learning experiences that foster oral language development and encourage social participation. Children need not only to learn to contribute and to participate actively, but they also need to learn to listen and to reflect. They need opportunities to present their own feelings, ideas, and concerns to others; conversely, they need opportunities to learn to respect viewpoints which differ from their own. Such opportunities enhance children's abilities to conceptualize and to communicate.

Grades Seven and Eight

History-social science in grades seven and eight should be viewed as a two-year, interrelated sequence of instruction which builds on the foundations laid in kindergarten through grade six. In these grades, students learn how the unique present in which they live came to be. In grade seven the focus is on the ever-changing world and the major epochs in the history of humankind. In grade eight the focus is on the American experience. Students learn about the significant events, major happenings, and critical turning points in our nation's history, and they learn about the men and women who have made contributions to political, economic, social, and aesthetic dimensions of American life.

Students in grades nine and ten should acquire basic civic literacy and begin to formulate a wider world view.

Grades Nine and Ten

Just as grades seven and eight should be regarded as a two-year sequence, so, too, should grades nine and ten. Heretofore in California, indeed throughout the nation, those grades have lacked a clearly defined identity in the history-social science curriculum. At the same time two serious shortcomings in many history-social science programs become ever more apparent. Students, by and large, have not been provided with sufficient opportunities to develop civic literacy or to develop a world view. This framework, therefore, is concerned with the provision of organized, accountable instruction in grades nine and ten which will remedy those lacks.

In recent years concern about civic literacy has been increasing. Several prestigious national task forces, scholars, and citizens and professional groups have conducted studies. Without exception, they have concluded that there is a "crisis in citizenship education" in the United States. They recommend the institution, reinstitution, or redesign—whichever is appropriate in a given school situation—of a required course in "civics." Most often they have suggested that it be taught at the ninth grade. Such a course, however, is intended to be far different from a static, "dry bones," structural approach to the study of government. It should focus on the real, vital, challenging roles which people play as citizens, workers, and consumers. A course in civics should provide each student with basic knowledge about how governments—local, state, and national—are organized and should function; it should allow students to acquire and practice citizenship skills and to encounter and examine the values to which our democratic society is dedicated; and it should help students examine and seek solutions to the problems and frustrations with which we as a people are wrestling as we strive to achieve our goals while adhering to our values.

In some school districts, organized accountable instruction, such as that just described, has been deferred to grade twelve and regarded as *the crown* of the social science program. Given the realities of life today and the earlier age at which students are maturing and coming into contact with the legal system, making consumer decisions, going to work, leaving school, and even becoming parents, it no longer seems prudent to delay or to limit such instruction to grade twelve. Such instruction then is too late for some students. It also is too little instruction for all students, given the increasingly complex problems with which our society, its subgroups, and individuals currently must deal.

Broadly conceived, civic literacy is not limited to the acquisition of that knowledge and those skills essential to participation in American society. Today's citizen must be knowledgeable about and capable of functioning in an increasingly interdependent world. It is recommended, indeed it is essential, therefore, that one year of history-social science instruction in grades nine and ten be devoted to the development of a world view.

Finally, if any further justification for giving express attention to organized, accountable instruction in citizenship is needed, it would be well to reread the central purpose of history-social science instruction set forth at the outset of this document:

> The central purpose of history-social science education is to prepare students to be humane, rational, understanding, and participating citizens in a diverse society and in an increasingly interdependent world—students who will preserve and continue to advance progress toward a just society.

Grades Eleven and Twelve

In grades eleven and twelve, the emphasis on citizenship is continued in a two-year sequence of interrelated courses. Grade eleven provides for the historical study of the ideals, traditions, and institutions that are uniquely American. It is concerned with the development of a realistic perspective on the nature of American society and on an understanding of the American experience in a world context. Studies in grade eleven furnish background essential for students who soon will be assuming roles as fully enfranchised citizens.

In grade twelve students take a more penetrating look at American government, and they study the economic, social, political, and legal systems of which they are a part. They then engage in comparative studies of other political, economic, social, and legal systems and of the roles which individuals and groups play in those systems.

Grade twelve can and should be considered a laboratory in which students synthesize their previous learning and develop into informed citizens who are capable of acting effectively and responsibly on issues that are of concern to them at the school, community, state, national, and global levels.

Summary of Recommendations for the Kindergarten Through Grade Twelve Sequence

It is recommended that:

- The amount of time and attention given to history-social science instruction be increased significantly in kindergarten through grade six.
- Grades seven and eight be regarded as a two-year, required sequence in the history-social science curriculum.

An historical study of the ideals, traditions, and institutions that are uniquely American is provided for in grade eleven. In grade twelve students take a more penetrating look at American government and engage in comparative studies of other political, economic, social, and legal systems.

- In grades nine and ten, one year be devoted to organized instruction that will promote civic literacy and one year to the development of a world view.
- History-social science be required in grades eleven and twelve and that the required instruction be supplemented by a variety of electives.
- At every grade level teaching and learning in history-social science be concerned with knowledge, skills, values, and social participation.

Learning about the physical, social, and emotional dimensions of self and others is an appropriate entry into the history-social science program.

Specific Grade Level Recommendations

Kindergarten—Myself and Others in My World

Learning about the physical, social, and emotional dimensions of self and others is critical to the development of a positive self-concept and an appropriate entry into the history-social science program. Comparisons with other living things may also help students to understand their uniqueness as human beings.

Some suggested topics suitable for kindergarten are:

1. The uniqueness of me; my similarities and differences
2. Finding my way in my world (map skills)
3. My needs and the needs of others and how people, including me, grow and change
4. Self-awareness and the employment of my five senses
5. My parents—their jobs and jobs that I can do
6. Special occasions in my life
7. Rules and why we need them
8. Cooperation and conflict between friends and classmates through work and play
9. Songs, stories, games, and dances my friends and I like
10. Learning to listen and listening to learn

Grade One—People at Home and at School

Exploring relationships of people in students' own homes and schools, as well as homes and schools in other cultures and societies, provides many opportunities to develop understandings and appreciations of how roles, ethnic heritages, traditions, the physical environment, and social and economic factors influence people's daily lives.

Some suggested topics suitable for grade one follow:

1. Getting from home to school safely
2. Time and my life (times for work; times for play; minutes, hours; days of week; months of the year; seasons)
3. Roles people play in my family and at my school
4. Relationships of home to school (space; time; people; rules; responsibilities; learning at home and at school; my rules at home and at school)
5. Families—my own and others in the community and in the world
6. Meeting needs at home and at school
7. Cooperation, conflict, and communication at home and in school

8. People who have made my world better and more beautiful
9. Who is an American?

Grade Two—People as Members of Groups

Exploring relationships among people in groups, as well as among groups, provides opportunities for students to further understand and appreciate themselves as social beings. Concepts such as norms, roles and responsibilities, communication, group problem solving, and decision-making are included in this setting.

Some suggested topics suitable for grade two are:

1. Groups to which I belong
2. American ethnic groups; their roles and contributions
3. People and the groups they form/join
4. Roles within groups (e.g., leaders; followers; innovators; isolates)
5. How groups use resources
6. Rules, responsibilities, and group norms
7. Communication, problem solving, and decision making in groups
8. Cooperation and conflict within/between groups
9. How and why groups change with time
10. How art, music, and dance influence and enrich group life
11. People who have contributed to the groups to which I belong

To understand and appreciate themselves as social beings, students need to explore the relationships of people in groups, as well as how one group interacts with another.

Grade Three—People as Members of Communities

Communities—locally, nationally, and worldwide—are dynamic living and changing phenomena. Within every community people act in both their individual and group capacities. They rely upon and influence one another. Within communities there is a great diversity. Understanding the nature of different communities and how people make communities function is the major focus of this setting.

Some suggested topics suitable for grade three are:

1. What is a community?
2. My community—where is it?
3. Our community—its past, present, and future
4. How community groups rely upon and influence one another
5. The diverse cultures and peoples who make up and contribute to our community
6. How is our community governed
7. Cooperation, conflict, and communication within our community
8. Appreciating and preserving the beauty of our community and improving the quality of life in it
9. How does our community compare/contrast to other communities in the United States and in the world?

Communities—locally, nationally, and worldwide—are dynamic, living, and changing phenomena to which children are introduced in grade three.

Grade Four—The People of a Region: California

The great diversity of California's geography, people, and social environments and its rich history offer excellent opportunities for students to explore important aspects of a significant region and their interrelationships. Comparing and contrasting California with other regions in the world provide an introduction to system-

Peoples who have helped our nation meet its major challenges, respond to changes, and grow politically, economically, socially, and culturally are the object of study in grade five.

atic learning experiences in a comparative study of people and their environments in the social sciences.

Some suggested topics suitable for grade four are:

1. The peoples of California today: who we are; where we live; the work we do; the way we participate as citizens
2. California: its land and its environment (e.g., regional setting; major physical features; economic and cultural geography; current environmental concerns)
3. California in prehistoric times
4. The history of California and the diverse peoples who made that history (the major historical periods)
5. Californians all: men and women who have made significant contributions to our social, political, economic, and cultural life
6. California's government: past and present
7. California: its place/role in the United States and in the world
8. Looking toward the future in California

Grade Five—The People of a Nation: The United States of America

In grade five, students learn about the geography of the United States, and they are introduced to its rich history. The emphasis should be on people, focusing on the many and diverse individuals and groups who have helped shape our nation. The contributions which men, women, and groups of various kinds have made to the political, economic, social, and cultural life of the United States should be highlighted.

Some suggested topics suitable for grade five are:

1. The land we call the United States
   Where is it? How is it divided into regions, states, communities? What are its major landforms, physical features, natural resources, major industries, current environmental concerns?
2. We, the people of the United States, today
   Who are we? Where do we live? What kinds of work do we do? How do we communicate with one another? What are some important ideas/values in which we as a people believe? How do we participate as citizens of our nation, state, communities?
3. The first Americans: peoples of yesterday
   When/how did the first Americans come to this continent? Into what groups were they divided? Where/how did those groups live? Who were their leaders? What were the major accomplishments/contributions of the various groups? When/how did the first Americans come into contact with the Europeans and Africans who came to explore/settle in America?
4. Explorers and settlers in America—north, south, east, and west
5. Founders of our nation
6. Peoples who have helped our nation meet its major challenges, respond to changes, and grow politically, economically, socially, and culturally over the years

7. The United States and its people: their place/roles in the world today

Grade Six—Our World, Its Diverse Peoples, and Their Societies

In grade six, students learn more about the geography of earth and the many diverse peoples who inhabit our world. They learn about both the similarities and the differences among individuals and societies. They consider those needs and life experiences which are common to all human beings. They also learn about the reasons for variations in human appearance and behavior.

In this grade students are introduced to the important concept of culture. They then explore its four basic elements in greater depth. The four basic and universal elements of culture are defined as language, technology, institutions, and beliefs.

Finally, students study some of the ways in which peoples of the world can and do work together on common, current technological and ecological concerns or through various economic, political, and cultural institutions.

Some suggested topics suitable for grade six are:

1. Earth as home for human beings—the world's water, land, climate, and natural resources and how they affect where and how peoples live
2. The world's diverse peoples and the reasons for differences in appearance and behavior
3. Human needs and life experiences common to all peoples
4. Why human societies develop different "ways of life" or diverse cultures
5. The role and importance of language in all human societies
6. Technology: tools, toolmakers, tool users, and technological change yesterday and today
7. Five basic institutions on which peoples in all societies depend: government, economic institutions, education, the family, and religion
8. The importance of human beliefs about the nature of the world, about beauty, and about right and wrong
9. Earth's people working together

Not only do students learn more about the geography of earth and the diverse peoples who inhabit it in grade six, but they also explore four basic and universal elements of culture: language, technology, institutions, and beliefs.

Grade Seven—The Changing World

The setting in grade seven is intended to extend students' understanding of geography and to provide [illegible] with a broad chronological overview of the major epochs in the history of humankind. Important ideas, inventions, institutions, movements of people, and great civilizations should be emphasized. Attention should be focused on both the Western and the non-Western worlds.

During the course of their study, students will have many opportunities to widen their acquaintance with and deepen their appreciation for the humanities. Music, painting, sculpture, architecture, archeology, law, philosophy, and ethics can be incorporated in a course of study designed for this grade level. The study of literature in its various forms from folklore to biography to drama also can be encompassed. So, too, can be the history of science and technology.

Some suggested topics suitable for grade seven are:

1. Knowledge about the geography of the world and how it has changed over the centuries

2. The transition from prehistoric to historic times
3. Selected case studies of great civilizations in the Western and non-Western worlds
4. When peoples meet: conflict, controversies, cooperation, and cultural change
5. Men and women who have made significant contributions to the social, political, economic, intellectual, and cultural life of the world or to its ethical thought
6. Great ideas and inventions that have transcended time and place: their origins, functions, and importance
7. Facing change in the world today and tomorrow

Grade Eight—The American Experience

During the course of this study, students should develop a better, deeper understanding of how the unique present in which they live came to be. To do that, students need to learn about those significant events, major happenings, and critical turning points in the American experience that have generated emotions, ideals, institutions, and values. They should become acquainted with peoples who lived during those critical times and get a sense of their feelings, values, and motivations. Students also should become more knowledgeable about the contributions which men and women have made to the political, economic, social, and aesthetic dimensions of American life.

Some suggested topics suitable for grade eight are:

1. Old World/New World: continuity and change
2. The Colonial experience viewed from a variety of perspectives
3. Founding a new nation: ideas, events, persons, values, and basic documents
4. Critical episodes, major happenings, and great turning points in the American experience from the days of the early Republic to the present time
5. Contributions of men, women, and groups to the political, economic, social, and cultural development of the United States
6. The unique present viewed in light of its historical antecedents

To function effectively as citizens of a democratic society, students not only need to acquire essential political and economic knowledge, but they also need regular opportunities to practice the skills essential for effective citizenship.

Grades Nine and Ten—Citizens and Civics

The emphasis in grades nine and ten is on preparing students to function effectively as citizens of a democratic society. To do that, students need to become both politically and economically literate. They need to develop a basic understanding of what it means to be a citizen of a democratic society. They need to know what government is, why and how governments are organized, how they function, and the basic values which undergird a free society.

Important as that knowledge is, it cannot be acquired in a vacuum. Students also need regular organized opportunities to practice the skills essential to effective citizenship so that they can assume the many roles as individuals and members of groups which are incumbent upon members of a democratic society.

Some suggested topics suitable for grades nine and ten are:

1. You, your life, and government
2. Why government?
3. What governments are; how they are organized and function at national, state, and local levels
4. Individual rights and responsibilities in a democratic society

5. Law and justice in a free society
6. Functioning effectively as an individual and as a member of groups in a democratic society by:
   - a. Becoming informed about public issues
   - b. Voting
   - c. Knowing the law and respecting it
   - d. Serving on juries
   - e. Working for volunteer groups
   - f. Paying taxes
   - g. Serving the community, state, and nation in a variety of ways
   - h. Demonstrating concern for the environment
   - i. Respecting property and persons
   - j. Behaving as responsible consumers
   - k. Participating in political parties
   - l. Advocating positions on public policy questions
   - m. Influencing decision-makers
   - n. Monitoring the work of public officials and agencies
   - o. Holding public office
7. Selected case studies of current public policy issues

Grades Nine and Ten—World Cultures

An in-depth study of selected cultures or culture areas chosen from both the Western and non-Western world should give students both an historical outlook on and a more contemporary view of the world. In the course of such study, students should have opportunities to compare and contrast philosophies, language, literature, religions, the arts, and drama of different cultures, as well as to become more knowledgeable about the historical events which are of significance.

Some suggested cultures or cultural areas suitable for this setting are the following:

Australia
Canada
China
Eastern Europe*
India
Japan
Korea
Latin America*
The Middle East*
Philippines
Polynesia
Southeast Asia*
Sub-Saharan Africa*
USSR
Western Europe*

Some suggested topics suitable for in-depth studies of cultures follow:

1. The land and the peoples
2. Political and economic developments across time
3. Social and family life, traditional and modern
4. Language, literature, and law
5. Religion and ethics
6. Philosophies and ideologies
7. The arts—visual, performing, and applied
8. Science, medicine, mathematics, and technology
9. Status and roles of women in varying cultures

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*Within each of the culture areas, the study of a particular country could be elected. For example, Mexico or Brazil might be selected from the Latin American areas.

10. Important men and women who influenced the culture
11. Cultural perspectives: How the people see themselves and how others see them
12. Cultural change and exchange

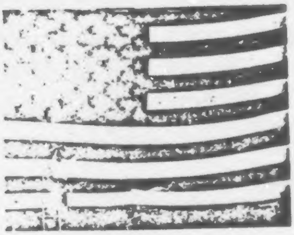
Grades Eleven and Twelve—The United States: Ideals, Traditions, and Institutions

The development of the ideals, traditions, and institutions that are uniquely American form the focus for the setting in grades eleven and twelve. To understand the role of the United States in the world requires an historical study of how and why those ideals, traditions, and institutions have been formed and reformed. Such study contributes to the formulation of a realistic perspective on the nature of American society, its achievements, its problems, and the direction in which it is headed. It facilitates an understanding of what experiences and values Americans share with other peoples of other times and places and in what respect Americans are different.

Some suggested topics suitable for grades eleven and twelve are:

1. The genesis of American ideals, traditions, and institutions
2. Unity and diversity among the American people
3. Americans shaping and reshaping their environment
4. Forming and reforming American political, economic, and social institutions
5. Americans expressing their beliefs and values in action and through the arts
6. Viewing the American experience in a world context
7. Shaping a positive future

From an historical study of how and why American ideals, traditions, and institutions have been formed and reformed, students will come to understand better the role of the United States in the world, its achievements, and its problems.



Grades Eleven and Twelve—The Individual in Political, Economic, and Social Systems

As students mature and prepare to claim additional rights and to assume additional responsibilities as citizens, it is essential that they engage in a more penetrating study of American government. Students also need to acquire a better understanding of other economic, political, and social systems in the world and to examine the role of the individual in those systems. Such study should enable students to develop understandings and skills essential to them for making wise decisions regarding their own lives and for dealing with critical issues in their local communities, in their state and nation, and in the larger global society of which they are a part.

Some suggested topics suitable for grades eleven and twelve are:

1. The socialization of the individual
2. Foundations of American government: Majority rule/minority rights; representative and limited government; separation of church and state; individual rights and responsibilities; interest groups and influence channels; power shared and power checked; due process and equal protection; equality of opportunity; consent and consensus
3. The individual and comparative political systems
4. The individual and comparative economic systems
5. The individual and comparative social systems
6. The individual and comparative legal systems
7. The individual and international and global economic, social, and political systems
8. Selected case studies

PREPARED STATEMENT SUBMITTED BY JOYCE BUCHHOLZ, CO-DIRECTOR AND DIRECTOR, SCHOOLS PROGRAM, WORLD AFFAIRS COUNCIL ON BEHALF OF THE BAY AREA GLOBAL EDUCATION PROGRAM; ROBERT FREEMAN, CO-DIRECTOR AND DIRECTOR, WEST COAST OFFICE, GLOBAL PERSPECTIVES IN EDUCATION; DAVID GROSSMAN, CO-DIRECTOR AND DIRECTOR, STANFORD PROGRAM ON INTERNATIONAL AND CROSS-CULTURAL EDUCATION

Thank you for this opportunity to present our ideas on how to effectively educate K-12 students in the general area of global awareness and more specifically on the problem of hunger.

The Bay Area Global Education Program is a consortium of international education resource providers, composed of Global Perspectives in Education, West Coast; The Stanford Program on International and Cross-Cultural Education, part of the Center for Research in International Studies at Stanford University; and the World Affairs Council of Northern California, Schools Program. Our purpose is to assist schools of the San Francisco Bay Area and California to enrich their curriculum with international and cross cultural content and to develop the knowledge, skills and attitudes needed by their graduates to function effectively in a rapidly changing and increasingly interdependent world. The Bay Area Global Education Program was first organized under the impetus of NDEA Title VI, Section 603 in 1979. Since the end of that funding source in 1982 this program has been supported primarily by foundations and local education organizations. During these five years we've worked extensively with over 25 school districts and involved nearly 4000 teachers and administrators in a variety of training and curriculum development projects. Our work takes a very broad perspective on the problem of developing a more global perspective and is long range and comprehensive in its approach to curriculum change and the retraining of teachers.

Objectives

School programs should be so conducted that students will:

** Recognize the interdependence of people, issues and events as they interact in the economic, political, social, and ecological systems of the world.

** Develop an awareness of current world conditions including such factors as population growth, economic conditions, world health, resource availability and use, trends in science and technology, major international conflicts and efforts to resolve them.

** Acquire problem solving and communication skills to deal with the inevitable conflicts and changes which occur in a complex, ambiguous and pluralistic world.

** Understand the history, traditions, and values of American society and their relationships to other major areas of the world, including Africa, Asia, Latin America and the Middle East.

** Develop awareness that they have a unique cultural perspective that is not universally shared by others.

** Recognize the importance of communicating with people from other cultures in their own languages.

** Seek solutions to world problems through participation in their own society's democratic processes.

You can see from these objectives that our program is not narrowly focused on education about hunger. However, to the degree that hunger is one of the prevalent conditions in the world, we try to make students aware of that condition, how hunger relates to the world's larger economic, political and ecological systems and what individuals, organizations and governments are doing about the problem. Finally we help students to acquire skills and perspectives that will enable them to think creatively about new solutions to the problem and even participate in solution strategies which they wish to support personally.

Approach to Change

Throughout our work we emphasize the importance of presenting a balanced and broad range of perspectives on the issues raised and try to show the interconnectedness of those issues. Our schools are not currently equipped to provide the kind of education on international affairs needed for responsible citizenship. Relatively little classroom time is devoted to world history, to other cultures, to foreign language study, or to the international dimensions of current issues and students generally lack the motivation or critical thinking skills needed to gain this background on their own. Such findings were confirmed by the 1979 President's Commission on Foreign Language and International Studies and reconfirmed locally by a 1982 survey in the San Francisco Bay Area.1 Although the need for more attention to

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[1] Foreign Language and International Studies in Selected Bay Area High Schools: A Preliminary Assessment, Bay Area & The World Project, 1983, 312 Sutter St., S.F., CA 94108

international affairs is sometimes recognized by local educators, today's schools are beset by a whole range of problems--an aging faculty, declining enrollments, ethnically diverse school populations, discipline and drug problems, inadequate funding, etc.--which demand immediate attention and divert effort from the complex task of improving and enriching international affairs instruction. When it is difficult under these conditions to improve teaching of any kind, instruction on current international issues, with its historically low priority, is at a particular disadvantage requiring a comprehensive approach.

Our approach is an incremental one of gradually strengthening the global dimension of schooling across a broad front. To do this we work on the following elements simultaneously:

1. Improved Instructional Materials on International Affairs

   We identify the many good materials already available commercially, develop other new materials, show how these materials can be easily fit into existing history, language, culture and science courses and then disseminate all of these to a broad network of educators. A key criterion in the selection and development of materials is that of providing diverse perspectives.

2. Leadership Development

   We conduct a comprehensive set of leadership training programs aimed at preparing teachers and administrators to play long term leadership roles in international education. These include 3 & 4 week summer institutes, study tours abroad, foreign language seminars, team development workshops, local after school and weekend workshops on specific skills and content such as critical thinking or Latin American cultures, and introductory events aimed at teachers, school board members, administrators and parents.

3. Strengthening Institutional Capabilities

We work systematically over the long term with schools, districts, county offices of education, education professional organizations, other universities and with the State Department of Education to bring their institutional resources to bear on aspects of international education which they are ready to work on. We also engage local funding and world affairs organizations in supporting such work.

Some examples from each of these areas will show how this comprehensive approach is building a base of interest and concern which will gradually bring broad based international education into more and more schools and as a result students will acquire the interest and skills needed to deal with issues such as hunger.

Instructional Materials Usage.

We have found that often the best way to lead into issues of hunger or development is to do so through the study of family life in other parts of the world. For example Stanford has developed units on Contemporary Family Life in Rural China, Contrasting Urban Lifestyles in Brazil and Teaching About Migration: Mexico. Each of these use a case study approach to introduce students to the way people live in other countries including the way they work, their standard of living and how some in each area suffer (or have suffered) from hunger and poverty. These experiences are compared to students own lives which lays the ground work for dealing with why some of these people are very poor. At that point other materials such as Food & Hunger by the Center for Teaching International Relations or Food for All: Teaching Against Hunger by Global Perspectives in Education or World Development by the world bank become relevant to students and can more directly satisfy student's interest in the subject. The point is that there are many ways to peak student interest in issues surrounding hunger & poverty and that this needs to be done first. Such an approach is also easier to interest teachers in because they, like their students, have difficulty facing unpleasant issues like hunger unless they have some larger context in which to place it.

Leadership Development

This summer 46 teachers will participate in a three week institute on International Economics, Trade and Development in order to develop the skills needed to help train their colleagues in content and skills surrounding this broad topic. Here they will get an overall grasp of the international economic system, an understanding of the differences between capitalism and socialism, a knowledge of how to teach about such concepts as foreign exchange, protectionism, comparative advantage and development, and a chance to practice such skills as systems analysis and problem solving. In the course of this broad overview the problem of hunger will be addressed by experts from Stanford's Food Research Institute and by political economists.

Other issues such as the debt crisis, unemployment, the role of multi-nationals in the developing world will also be addressed. Speakers and participants will explore how these issues relate to each other and to international trade and investment patterns generally. Teachers will select issues and skills of special interest and develop presentations on them which can be shared with colleagues back home. Finally, they will plan with an implementation team from their districts how to conduct in-service training workshops throughout the year. Based on previous experience this should result in some 30-40 workshops involving 1500-2000 teachers in 1984-85.

Strengthening Institutional Capability

During the past year we founded four university based consortia, two in the Bay Area, one in San Diego and one in the Central Valley. One of these held its own institute this summer with a focus on Latin America. It used the Latin America expertise from two universities and brought teams of teachers and administrators from two school districts. Participants were introduced to broad cultural learning about Latin America, some of the issues of development and especially the impact of the debt crisis (both in Latin America and in the U.S.) and the issue of migration from Mexico. These teams will work during the next several years to gradually raise awareness of global issues especially as they touch on Latin America and as appropriate will begin to introduce the lessons mentioned above. Because of the University and County Education Department involvement teams will also serve as resources for future projects along with the university expertise.

Conclusion

These illustrations and the background above suggest how a comprehensive program in international education can work to increase citizenship skills in this vital area. It is a long term effort with the potential for improving the international dimension of education throughout California. We believe that only through such comprehensive efforts can any real progress be made in this difficult educational arena.

The Congress could greatly aid such efforts throughout the U.S. by adopting educational policies and programs which support:

1. comprehensive long term approaches to the study of international issues.
2. the study of issues within a historical and global context and the presentation of diverse perspectives on these issues.
3. approaches to institution building which involve universities (the repositories of valid international knowledge), State and local education agencies and voluntary organizations sharing the international education concern.
4. a clear focus on the local school as the institution most qualified to carry out local public education on international issues.
5. clear lines of accountability which insure that materials development or leadership training projects are influenced from the outset by local schools and communities and are

designed in turn to have impact in local schools.

6. periodic assessments of the state of international knowledge and attitudes in the general public as a means of measuring the overall success of the effort over time.
7. the development of networks (both personal and electronic) which encourage those developing global awareness projects to share their learnings with each other and with government.

Thank you for this opportunity to share our cooperative experience with the Committee. We will be glad to respond to your specific questions about our work.

PREPARED STATEMENT OF ANITA M. MERMEL, DIRECTOR, CALIFORNIA OFFICE, OVERSEAS EDUCATION FUND

MR. CHAIRMAN, MEMBERS OF THE COMMITTEE, I AM VERY HONORED TO PARTICIPATE AT THIS IMPORTANT HEARING AND TO CONSIDER WITH YOU THE ROLE OF EDUCATIONAL INSTITUTIONS IN ALLEVIATING WORLD HUNGER, AND IN PARTICULAR TO EXPLORE THE NEED FOR WIDESPREAD PUBLIC EDUCATION REGARDING THIS CRITICAL ISSUE.

I AM ANITA MERMEL, DIRECTOR OF THE CALIFORNIA OFFICE OF THE OVERSEAS EDUCATION FUND (OEF). OEF WAS FOUNDED IN 1947 BY THE LEAGUE OF WOMEN VOTERS, THOUGH WE ARE NOW INDEPENDENT OF LEAGUE AFFILIATION. OEF IS A NONPROFIT INTERNATIONAL DEVELOPMENT ORGANIZATION, OR "PVO", DEDICATED TO COLLABORATING WITH WOMEN, WOMEN'S ORGANIZATIONS AND GOVERNMENT AGENCIES IN THE DEVELOPING COUNTRIES TO IMPROVE THE ECONOMIC CONDITION OF LOW INCOME WOMEN. WITH A CORE STAFF IN WASHINGTON, D.C. AND RECENTLY ESTABLISHED OFFICES IN SRI LANKA, HONDURAS, ECUADOR, AND SENEGAL, OEF HAS WORKED IN OVER 50 THIRD WORLD COUNTRIES TO INCREASE WOMEN'S CONTRIBUTION TO THE ECONOMIC DEVELOPMENT OF THEIR COUNTRIES. OEF BELIEVES THAT WOMEN'S ECONOMIC PRODUCTIVITY IS SO IMPORTANT IN THE THIRD WORLD THAT DEVELOPMENT CANNOT OCCUR WITHOUT IMPROVING THEIR SKILLS TO PARTICIPATE MORE FULLY. TODAY, OEF FOCUSES ITS TECHNICAL ASSISTANCE ON TRAINING WOMEN, ESPECIALLY POOR WOMEN, IN SMALL ENTERPRISE DEVELOPMENT, FARM PRODUCTION COOPERATIVES AND JOB SKILLS FOR THE PUBLIC AND PRIVATE SECTORS.

IN THE UNITED STATES, OEF EDUCATES AMERICANS ABOUT GLOBAL SOCIAL AND ECONOMIC ISSUES THROUGH FOCUSSING DEVELOPMENT EDUCATION PROGRAMS ON CAREFULLY TARGETTED AUDIENCES OF WOMEN, AND THROUGH THEM TO THE BROADER CONSTITUENCIES THEY CAN ACCESS AND MOTIVATE. OEF DEVELOPMENT EDUCATION PROGRAMS ALWAYS INCLUDE LONG RANGE FOLLOW UP ACTIVITIES AND ACTION STRATEGIES. DEVELOPMENT EDUCATION IS THE PRINCIPAL MANDATE OF THE CALIFORNIA OFFICE, WHICH I DIRECT, BUT OEF'S EDUCATIONAL PROGRAMS SPREAD BEYOND THE BORDERS OF THIS STATE. THEY ARE NATIONAL IN SCOPE.

AS AN ASIDE, PERHAPS I SHOULD MENTION HOW THE TERM "DEVELOPMENT EDUCATION" IS GENERALLY USED BY OEF AND BY MANY OTHER PRIVATE VOLUNTARY ORGANIZATIONS. AS THE RESULT OF AN INTENSE COLLABORATIVE EFFORT INVOLVING REPRESENTATIVES OF MORE THAN 50 U.S. VOLUNTARY AGENCIES, THE FOLLOWING STATEMENT SUMMARIZES THE CURRENT SHARED VIEW:

> DEVELOPMENT EDUCATION HAS AS A PRIMARY GOAL THE BUILDING OF A COMMITTED CONSTITUENCY FOR DEVELOPMENT BOTH AT HOME AND ABROAD. IT BEGINS WITH A RECOGNITION OF GLOBAL INTERDEPENDENCE AND THE CONTINUING NEED FOR JUSTICE AND EQUITY IN THE WORLD. ITS PROGRAMS AND PROCESSES CONVEY INFORMATION, PROMOTE HUMANITARIAN VALUES, AND STIMULATE INDIVIDUAL AND COMMUNITY ACTION AIMED AT IMPROVING THE QUALITY OF LIFE AND ELIMINATING THE ROOT CAUSES OF WORLD POVERTY.*

AS MANY OF OEF'S OVERSEAS PROJECTS HAVE BEEN FOCUSSED ON RURAL COMMUNITIES IN DEVELOPING COUNTRIES, OEF HAS ACCUMULATED CONSIDERABLE "HANDS-ON" EXPERIENCE IN DESIGNING AND IMPLEMENTING PROGRAMS THAT IMPROVE AGRICULTURAL PRODUCTION, PROCESSING AND MARKETING. EXPERIENCE WITH THESE PROGRAMS HAS HEIGHTENED OEF'S AWARENESS AND CONCERN OF THE GREATER TOLL THAT HUNGER EXACTS FROM WOMEN IN THE DEVELOPING NATIONS. BUT, MOST IMPORTANTLY, OEF UNDERSTANDS THE IMPORTANT CONTRIBUTION WOMEN MAKE IN GROWING FOOD STAPLES THROUGHOUT THE THIRD WORLD. IMPROVING WOMEN'S AGRICULTURAL PRODUCTIVITY IS CRITICAL TO SOLVING WORLD HUNGER PROBLEMS.

CONSCIOUS OF A GENERALIZED LACK OF PUBLIC AWARENESS IN THE UNITED STATES REGARDING THE SEVERITY OF THE POVERTY, HUNGER, MALNUTRITION AND DISEASE FACED BY MILLIONS OF THIRD WORLD INHABITANTS, OEF HAS BEEN DESIGNING AND IMPLEMENTING DEVELOPMENT EDUCATION PROGRAMS FOCUSED ON THE PROBLEMS OF HUNGER AND POVERTY WITHIN THIS COUNTRY SINCE THE MID-1970's. THESE PROGRAMS ARE DESIGNED TO HELP AMERICANS UNDERSTAND HOW ACTIONS TAKEN IN THIS COUNTRY AFFECT PEOPLE IN THE THIRD WORLD, AND, IN TURN, HOW AMERICANS ARE INCREASINGLY AFFECTED

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*A Framework for Development Education in the United States, prepared by the Joint Working Group on Develpoment Education of PAID (Private Agencies in International Development) and ACVA (American Council of Voluntary Agencies), Washington D.C , Nov. 1983.

BY EVENTS OVERSEAS.

IN MARCH, 1978, OEF CONDUCTED A PILOT WORKSHOP EMPHASIZING THE ROLE AND STATUS OF WOMEN IN THIRD WORLD COUNTRIES. PARTICIPANTS FROM THE COLUMBIA, SOUTH CAROLINA AREA GAINED A PERSONAL UNDERSTANDING OF GLOBAL INTERDEPENDENCE THROUGH CONTRASTING AND COMPARING WOMEN'S ISSUES IN THEIR COMMUNITY WITH THOSE OF COMMUNITIES OVERSEAS. TWO YEARS LATER, THE NATIONAL ENDOWMENT FOR THE HUMANITIES FUNDED OEF'S "WOMEN AND WORLD ISSUES PROJECT", PROVIDING FUNDS TO CONDUCT SIMILAR WORKSHOPS IN FIVE NEW CITIES: AUSTIN, PHOENIX, LOS ANGELES, PORTLAND AND ROCHESTER, N.Y. IN ADDITION TO THE INDIVIDUAL SUCCESSES PER SE OF EACH OF THESE WORKSHOPS, A HANDBOOK WAS PRODUCED WHICH DESCRIBES THE PROCESS OF PLANNING AND IMPLEMENTING SIMILAR WORKSHOPS FOR USE BY OTHER COMMUNITIES. THIS HANDBOOK, ENTITLED WOMEN AND WORLD ISSUES: AN ACTION HANDBOOK FOR YOUR COMMUNITY HAS BEEN DISTRIBUTED AND USED WIDELY AROUND THE COUNTRY SINCE ITS PUBLICATION.

IN 1982, OEF WAS PRIVILEGED TO RECEIVE ONE OF THE FIRST FEDERALLY-FUNDED DEVELOPMENT EDUCATION MATCHING GRANTS, COMMONLY REFERRED TO AS BIDEN-PELL FUNDING, ADMINISTERED BY THE U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. AGAIN IN 1983, OEF WAS ONE OF THE FIVE ORIGINAL GRANTEES TO RECEIVE RENEWED FUNDING. JUST RECENTLY WE WERE AWARDED A THIRD YEAR OF FUNDING AND ARE CURRENTLY INITIATING A NEW CYCLE OF ACTIVITIES.

WITH THE BIDEN PELL FUNDING PROVIDED BY AID, OEF HAS BEEN ABLE TO CAPITALIZE ON ITS SPECIFIC EXPERTISE IN THE AREAS OF WOMEN, HUNGER AND THE AGRICULTURAL SECTOR IN THE THIRD WORLD, AS WELL AS ON ITS HIGHLY SUCCESSFUL AND PROVEN METHODOLOGY FOR INITIATING LONG-TERM AND SELF-SUSTAINING EDUCATIONAL

PROCESSES WITHIN THE U.S. THE RESULTING PROJECT --AND CURRENTLY OEF'S MOST IMPORTANT EDUCATIONAL ACTIVITY-- IS ENTITLED WOMEN AND WORLD HUNGER: THE ROLE OF WOMEN IN FOOD PRODUCTION. IT IS A MULTI-YEAR PROJECT THAT INCLUDES OVER 10 MAJOR CITIES, AS WELL AS THREE ENTIRE STATES.

GOALS AND OBJECTIVES

THE STATED GOALS OF THE PROJECT ARE TO INCREASE THE PUBLIC AWARENESS OF THE POLITICAL, ECONOMIC, TECHNICAL AND SOCIAL FACTORS RELATING TO HUNGER AND POVERTY, PARTICULARLY THE ROLES THAT WOMEN PLAY IN FOOD PRODUCTION IN THE THIRD WORLD; TO PROMOTE HUMANITARIAN VALUES; TO STIMULATE INDIVIDUAL AND COMMUNITY ACTION AIMED AT ELIMINATING THE ROOT CAUSES OF WORLD HUNGER AND POVERTY; AND TO DEVELOP AN EDUCATION PROGRAM ON WORLD HUNGER AND WOMEN FOR USE BY TARGETTED PROJECT GROUPS AND THEIR MEMBERSHIPS, AS WELL AS OTHER COMMUNITY GROUPS NATIONWIDE.

FUNDAMENTAL OBJECTIVES OF THE PROJECT ARE:

1) TO INVOLVE A VARIETY OF WOMEN'S ORGANIZATIONS, COMMUNITY, CIVIC, AND OTHER AFFINITY GROUPS, IN PARTICIPATORY EDUCATIONAL ACTIVITIES RELATED TO THE THEME;

2) TO TEST VARIOUS MODELS FOR ORGANIZING PARTICIPATORY WOMEN AND HUNGER WORKSHOPS IN VARIOUS GEOGRAPHIC SETTINGS;

3) TO DEVELOP NEW WRITTEN AND VISUAL EDUCATIONAL MATERIALS ON THE PROJECT THEME;

4) TO EXPERIMENT WITH INNOVATIVE EDUCATIONAL TECHNOLOGIES, SPECIFICALLY VIDEO PRESENTATIONS AND TELECONFERENCING; AND

5) TO CONSOLIDATE AND INSTITUTIONALIZE OEF'S EARLIER EFFORTS IN DEVELOPMENT EDUCATION.

OVER THE PAST TWO YEARS --AND WORKING IN COLLABORATION WITH OVER 30 GRASSROOTS ORGANIZATIONS IN EACH COMMUNITY-- OEF HAS SPONSORED CONFERENCES FOCUSING ON THE INTERNATIONAL PERSPECTIVE OF WOMEN AS FOOD PRODUCERS IN FIVE MAJOR CITIES IN THE WEST: DENVER, LOS ANGELES, SAN DIEGO, SANTA BARBARA AND TUCSON. THE NEW ROUND OF ACTIVITIES BEGINNING THIS SUMMER INCLUDE THE TESTING OF STATE-WIDE MODELS IN IOWA AND CONNECTICUT. THIS YEAR WE WILL CONSOLIDATE AND STRENGTHEN CONTINUING EFFORTS IN PREVIOUS OEF DEVELOPMENT EDUCATION PROJECT CITIES. IN PARTICULAR, AND AT THE REQUEST OF AUSTIN, TEXAS COMMUNITY LEADERS WITH WHOM WE WORKED FOUR YEARS AGO, OEF IS PROVIDING NEW EDUCATIONAL MATERIALS AND TECHNICAL ASSISTANCE FOR THEIR EFFORTS TO PRODUCE A SERIES OF COMMUNITY FORUMS ON WOMEN AND HUNGER THROUGHOUT THE YEAR. WE ARE ALSO WORKING WITH WOMEN IN EL PASO, TEXAS AND CIUDAD JUAREZ, MEXICO TO EXPLORE THE POTENTIAL FOR A NEW, BI-NATIONAL, CROSS-BORDER MODEL OF COOPERATIVE DEVELOPMENT EDUCATION. OUR DISCUSSIONS ARE WELL ADVANCED WITH THE CENTER FOR BORDER STUDIES OF NORTHERN MEXICO.

THEMES

THROUGHOUT THE WORLD, WOMEN ARE INTEGRAL PARTICIPANTS IN THE FOOD PRODUCTION CYCLE. THEY PLANT SEEDLINGS, WATER AND WEED THE FIELDS, AND ASSIST IN HARVESTING. THEY ARE RESPONSIBLE FOR TRANSFORMING THE RAW SUPPLIES INTO EDIBLE AND NUTRITIOUS MEALS FOR THEIR FAMILIES. FOR EXAMPLE, IN AFRICA, 60-80% OF THE AGRICULTURAL WORK IS DONE BY WOMEN. UNTIL RECENTLY, HOWEVER, AFRICAN MEN WERE THE PRIMARY TARGETS OF DEVELOPMENT PROGRAMS FOR TECHNICAL TRAINING, EXTENSION SERVICES, OR IMPROVED AGRICULTURAL INPUTS. ANY DEVELOPMENTAL PROGRAMS FOCUSED ON WOMEN, TENDED TO FOCUS ON WOMEN'S REPRODUCTIVE ROLES, AND NOT ON THEIR ECONOMIC PRODUCTIVITY.

AMERICANS DO NOT UNDERSTAND THAT WOMEN ARE PRIMARY FOOD PRODUCERS AROUND THE WORLD AND THAT TECHNICAL ASSISTANCE TO THEM CAN DOUBLE AND EVEN TRIPLE THE FOOD THEY PRODUCE, NOT ONLY TO FEED THEIR FAMILIES BUT TO PROVIDE FOOD STAPLES FOR THEIR COMMUNITIES AND THEIR COUNTRIES AS WELL. EXPERTS ALREADY AGREE THAT LARGE SCALE TRANSFERS OF FOOD FROM THE DEVELOPED TO THE DEVELOPING WORLD IS NOT THE ANSWER TO WORLD HUNGER PROBLEMS. GROWING MORE FOOD WHERE PEOPLE LIVE IS. TECHNICAL ASSISTANCE TO HELP LOCAL FARMERS, ESPECIALLY WOMEN FARMERS WHO GROW SUBSISTENCE FOOD, IS OF CRITICAL IMPORTANCE ALONG WITH THE DEVELOPMENT OF SIMPLE IRRIGATION TECHNOLOGIES AND THE AVAILABILITY OF CREDIT.

SINCE WOMEN IN ALL CORNERS OF THE WORLD, INCLUDING THE U.S., ARE INVOLVED IN SOME PART OF THE FOOD PRODUCTION PROCESS, THE THEME OF OUR PROJECT: "WOMEN AND WORLD HUNGER: WOMEN'S ROLE IN FOOD PRODUCTION" HAS PROVEN TO SPARK THE INTEREST AND ATTRACT THE ATTENTION OF DIVERSE POPULATIONS OF U.S. WOMEN.

BUT THIS SHARED GLOBAL COMMONALITY BETWEEN ALL WOMEN, THAT OF PROVIDING FOOD FOR THEIR FAMILIES, IS NOT ENOUGH TO IGNITE THE ENTHUSIASM AND COMMITMENT OF AMERICAN WOMEN. WE HAVE FOUND THAT AMERICAN WOMEN BECOME REALLY EXCITED ABOUT THE FACT THAT WOMEN ARE SIGNIFICANT FOOD PRODUCERS THROUGHOUT THE THIRD WORLD. THEY ARE INSPIRED TO ACTION BY THE KNOWLEDGE THAT INCREASING THE CAPABILITIES OF THIRD WORLD WOMEN IN THE AGRICULTURAL SECTOR WILL PRODUCE IMPORTANT ADVANCES TOWARDS SOLVING THE PROBLEM OF HUNGER WORLDWIDE. AMERICAN WOMEN ARE RELIEVED TO GO BEYOND TALK OF MOTHERHOOD, NUTRITION AND CHILD CARE IN THE DEVELOPING WORLD, TO ACTIVELY DISCUSS WOMEN'S ROLES AS ECONOMIC PRODUCERS IN THESE SAME COUNTRIES. THE FRESHNESS OF THE THEME OF WOMEN'S ECONOMICALLY PRODUCTIVE ROLES, OF THEIR SIGNIFICANT CONTRIBUTIONS AS FARMERS, PROCESSORS AND DISTRIBUTORS OF FOOD HAS SERVED AS A POWERFUL

LINKING MECHANISM FOR CONFEREES AND THEIR PLANNING COMMITTEES ALIKE.

AS PROJECT PARTICIPANTS EXPLORE THE ISSUES, THEY UNRAVEL MANY COMMONALITIES BETWEEN THEIR OWN LIVES AND THE LIVES OF WOMEN OVERSEAS. THEY BEGIN TO RECOGNIZE THAT THE DISPARITIES OF WEALTH AND POVERTY THAT THEY HAVE BECOME SO AWARE OF IN THIS COUNTRY, AND WHICH ARE INCREASINGLY REFERRED TO AS THE FEMINIZATION OF POVERTY, ALSO HAVE THEIR COUNTERPARTS ABROAD. THE BARRIERS AGAINST WOMEN GAINING GREATER ACCESS TO THE RESOURCES THAT DO EXIST ARE THE SAME ACROSS CULTURES, AND EVEN ACROSS DIFFERING POLITICAL AND ECONOMIC SYSTEMS. THIS NEWFOUND AWARENESS BECOMES THE LINK THAT IMPELS WOMEN OF THIS COUNTRY TO TAKE ACTION TO HELP THEIR SISTERS OVERSEAS.

OEF'S PARTICIPATORY MODEL FOR COMMUNITY EDUCATION

OEF FOLLOWS A PARTICIPATORY METHODOLOGY IN ALL PROJECTS, WHETHER HERE OR ABROAD. BASED ON THE THEORY THAT LOCAL RESPONSIBILITY FOR AND CONTROL OF CONTENT AND FORMAT WOULD YIELD A HIGHER LEVEL OF SUSTAINED COMMITMENT FROM PARTICIPANTS, OEF INVOLVES THE BENEFICIARIES IN THE PROJECT'S CONCEPTUALIZATION, PLANNING, IMPLEMENTATION, EVALUATION AND PLANNING FOR FUTURE ACTIVITIES.

OEF's ROLE AS SPONSOR OF THIS PROJECT IS TO SERVE AS A CATALYST, FACILITATOR AND TECHNICAL ADVISOR. AS PART OF THE START-UP PHASE OF ANY NEW CITY, OEF PRESENTS AN OVERVIEW OF THE ISSUE OF WOMEN AND WORLD HUNGER TO AN AD HOC GROUP OF LEADERS REPRESENTING DIVERSE COMMUNITY ORGANIZATIONS. WE THEN INITIATE A DISCUSSION REGARDING WHY AMERICANS SHOULD BE CONCERNED AND WHAT WE CAN DO INDIVIDUALLY AND AS GROUPS ABOUT THESE PROBLEMS.

WE INVITE THOSE PRESENT TO COMMIT TO THE TASK OF EDUCATING, MOTIVATING AND INVOLVING THEIR CONSTITUENCIES IN THE DISCUSSION AND SOLUTION OF THIS ISSUE. LOCAL STEERING COMMITTEES ARE THEN GIVEN WIDE LATITUDE TO DESIGN THE FORMAT AND CONTENT OF THEIR PROJECT ACTIVITIES. THERE IS ONLY ONE STIPULATION: THAT THE CENTRAL THEME BE ON "WOMEN AS FOOD PRODUCERS." THE CONTENT OF SUPPORTING ACTIVITIES, PANELS, DISCUSSION GROUPS, ETC. IS LEFT TO THE COMMITTEES TO FORMULATE.

OEF PROVIDES THE LOCAL PLANNERS WITH OUR COMMUNITY ACTION HANDBOOK, WHICH SPELLS OUT THE STEPS FOR PLANNING, FINANCING, PUBLICIZING AND EXECUTING VARIOUS TYPES OF DEVELOPMENT EDUCATION EVENTS. WE OFFER THEM SPECIAL WRITTEN MATERIALS ON WOMEN AS FOOD PRODUCERS, THAT HAVE BEEN PREPARED BY OEF SPECIFICALLY FOR THIS PROJECT. THANKS TO THE BIDEN-PELL FUNDING, WE HAVE BEEN ABLE TO PROVIDE EACH CITY SEED-FUNDING TO COVER AT LEAST THE HONORARIA FOR KEYNOTE SPEAKERS, THEIR TRAVEL EXPENSES, AND MINIMAL PRINTING AND POSTAGE COSTS FOR EACH COMMUNITY. OEF RETURNS SEVERAL TIMES THROUGHOUT THE PLANNING PHASE (WHICH TYPICALLY RANGES FROM 6-8 MONTHS) TO HELP SOLVE ANY PROBLEMS THAT HAVE SURFACED, AND TO ASSIST IN IDENTIFYING SOURCES OF INFORMATION AROUND THE COUNTRY THAT WILL SUPPORT EACH COMMUNITY'S EMERGING AND CUSTOMIZED CONFERENCE PROGRAM AND GOALS.

TO DATE, MOST CITIES HAVE OPTED FOR ORGANIZING 1-2 DAY CONFERENCES WHOSE PROGRAMS TYPICALLY INCLUDE ONE OR TWO GUEST KEYNOTE SPEAKERS; PANEL DISCUSSIONS FEATURING LOCAL EXPERTS; HIGHLY PARTICIPATORY WORKSHOPS WHERE ALL CONFEREES HAVE AN OPPORTUNITY TO SHARE IDEAS AND HAVE THEIR QUESTIONS ANSWERED; RELATED INTERNATIONAL ENTERTAINMENT TO CREATE EMPATHY BETWEEN CULTURES; AND AN INTRODUCTION TO FOODS FROM THE DEVELOPING NATIONS AS PART OF THE MEAL BREAKS.

IT IS IMPORTANT TO NOTE THAT WITH OEF'S METHODOLOGY, THE MAJOR PART OF THE LEARNING AND MOTIVATING OCCURS THROUGHOUT THE PLANNING STAGES. THE FINAL EVENT ITSELF IS SIMILAR TO A "GRADUATION" CEREMONY, A TIME TO GATHER FAMILIES AND FRIENDS IN CELEBRATION, TO SHARE A NEW AWARENESS AND TO ACKNOWLEDGE THE COMMENCEMENT OF NEW ACTIONS TOWARDS SOLVING HUNGER WORLDWIDE.

PARTICIPATION

BASED ON ITS YEARS OF EXPERIENCE IN DEVELOPMENT EDUCATION PROGRAMS IN THE U.S., OEF BELIEVES THAT THE PRIMARY TARGET GROUPS FOR A PROGRAM WITH THE THEME OF "WOMEN AND WORLD HUNGER", ARE WOMEN'S ORGANIZATIONS AND OTHER ASSOCIATIONS WITH A SPECIAL CONCERN FOR THE STATUS OF WOMEN. OEF HAS DEMONSTRATED ITS CAPACITY TO MOBILIZE GROUPS NOT USUALLY TARGETTED BY OTHER ORGANIZATIONS. OEF HAS HAD TWO PRINCIPAL TARGET GROUPS IN THE PREVIOUS YEARS OF ITS PROGRAM, AND ITS EXPANDING TO A THIRD TARGET GROUP THIS SUMMER.

THE FIRST GROUP CONSISTS OF BROAD-BASED WOMEN'S ORGANIZATIONS, SUCH AS CHURCH, COMMUNITY AND NEIGHBORHOOD ASSOCIATIONS, AND REFUGEE GROUPS. MANY OF THESE GROUPS WHICH OEF HAS DEMONSTRATED SUCCESS IN WORKING WITH, SUCH AS BLACK, HISPANIC, ASIAN AND AMERICAN INDIAN WOMEN'S ASSOCIATIONS, HAVE FREQUENTLY BEEN VIEWED AS "HARD TO REACH." OEF's DEVELOPMENT EDUCATION PROGRAMS HAVE ALSO INCLUDED MORE TRADITIONAL WOMEN'S ORGANIZATIONS, SUCH AS THE AMERICAN ASSOCIATION OF UNIVERSITY WOMEN (AAUW), LEAGUE OF WOMEN VOTERS (LWV), YWCA AND WOMEN'S CHURCH GROUPS. THROUGH THE PARTICIPATORY NATURE OF OEF-SPONSORED WORKSHOPS, A FORUM OF COMMUNICATION BETWEEN THE LEADERS AND MEMBERS OF "TRADITIONAL" AND "HARD TO REACH" GROUPS HAS BEEN ESTABLISHED.

THE SECOND GROUP CONSISTS OF ENTREPRENEURIAL AND CORPORATE WOMEN. THIS GROUP OF LEADERS IS RAPIDLY EXPANDING AS MORE AND MORE WOMEN MOVE INTO

THE WORK FORCE AND AS OPPORTUNITIES FOR ADVANCEMENT IN CORPORATIONS AND PROFESSIONS INCREASE FOR WOMEN. THESE WOMEN ARE FORMING NEW ORGANIZATIONS. THROUGH OEF'S KEY CONSTITUENCIES --BOARD MEMBERS AND TRUSTEES, THE OEF NATIONAL WOMEN IN BUSINESS COMMITTEE, THE OEF ASSOCIATES PROGRAM IN LOS ANGELES-- ACCESS HAS BEEN ESTABLISHED TO THE EMERGING NATIONAL NETWORK OF WOMEN IN BUSINESS LEADERSHIP ORGANIZATIONS. THESE LEADERS HAVE GENERALLY ORIENTED THEIR EFFORTS TOWARD IMPROVING WOMEN'S ECONOMIC POSITION IN THE UNITED STATES. THEY ARE INTERESTED IN BROADENING THEIR CONCERNS, AND THROUGH PARTICIPATION WITH OEF, THEY HAVE THE OPPORTUNITY TO INCREASE THEIR UNDERSTANDING OF WOMEN'S ECONOMIC STATUS THROUGHOUT THE WORLD.

THE THIRD AND NEWEST CONSTITUENCY CONSISTS OF RURAL WOMEN IN THE UNITED STATES. THROUGH THE BROAD BASED ORGANIZATIONS EARLIER MENTIONED, AND STATEWIDE HOME ECONOMIST EXTENSION SERVICES TIED TO THE LAND-GRANT COLLEGES, OEF PLANS TO INTRODUCE ITS DEVELOPMENT EDUCATION PROGRAM TO A CONSTITUENCY THAT SEEMS HIGHLY RELEVANT TO OEF'S OVERALL ORGANIZATIONAL GOALS. THE ISSUES OF PROPERTY RIGHTS, INHERITANCE, ACCESS TO CREDIT, EDUCATIONAL OPPORTUNITIES, OFF-FARM EMPLOYMENT, ETC. ARE ALL VITAL CONCERNS TO RURAL WOMEN IN THE U.S. AS WELL AS IN THE THIRD WORLD.

THESE THREE TARGET GROUPS ARE NOT MUTUALLY EXCLUSIVE. THE CONSTITUENCIES OF ONE OFTEN OVERLAP WITH THE OTHER TWO. FOR EXAMPLE, A FARM WOMAN MAY OWN AN EXPORT-IMPORT BUSINESS, AND MAY BE AN ACTIVE MEMBER OF THE AAUW. THE THREE TARGET GROUPS ARE NOT NECESSARILY DISTINGUISHABLE BY AGE, ETHNIC, EDUCATION OF ECONOMIC STATUS. THE OVERALL PROJECT AUDIENCE HAS A BROAD AND DIVERSE RANGE OF PERSPECTIVES. SPECIFIC WORKSHOPS AND ACTIVITIES ARE SOMETIMES DIRECTED TO SPECIFIC AUDIENCES. IN A GIVEN ACTIVITY THERE MAY

NOT BE A COMPLETELY DIVERSE AUDIENCE, BUT IN THE PROJECT AS A WHOLE, THE PARTICIPANTS REPRESENT A REASONABLE CROSS-SECTION OF THE U.S. POPULATION OF WOMEN.

THE TOTAL NUMBER OF PEOPLE DIRECTLY INVOLVED IN THE PROJECT RANGES FROM 200 - 400 PER CITY. TYPICALLY, FROM 30 - 40 ORGANIZATIONS HAVE COLLABORATED AT EACH SITE. INDIRECT IMPACTS HAVE BEEN ESTIMATED FROM BETWEEN 3,000 - 8,000 PER CITY AS MOST OF THE PARTICIPATING ORGANIZATIONS HAVE WIDELY PROMOTED THE ACTIVITIES AMONG THEIR OWN CONSTITUENCIES.

OEF IS PARTICULARLY INTERESTED IN MONITORING THE INDIRECT IMPACTS OF OUR RECENTLY INCREASING COLLABORATION WITH WOMEN'S BUSINESS LEADERSHIP GROUPS. MEMBERSHIP IN THESE GROUPS TENDS TO BE SMALLER THAN WITH THE MORE TRADITIONAL WOMEN'S GROUPS, YET THE INDIRECT IMPACTS WITH THE CORPORATE WOMEN MIGHT PROVE HIGHLY SIGNIFICANT IN OTHER WAYS. THESE WOMEN PARTICIPATE IN POLICY DECISIONS AT THE CORPORATE LEVEL, AND AS THEY MOVE INTO POSITIONS OF POWER, THEY HAVE THE POTENTIAL TO EDUCATE SUBSTANTIAL SECTORS OF CORPORATE AND GOVERNMENT AMERICA.

INTEGRATION: COOPERATIVE EFFORTS AND FOLLOW-UP

OEF's WOMEN AND WORLD HUNGER PROJECT IS "INTEGRATED" IN THREE SENSES: A) MANY ORGANIZATIONS AND INDIVIDUALS FROM VARIOUS PERSPECTIVES PARTICIPATE AND COLLABORATE IN THE PROGRAM: B) AS LONG-TERM FOLLOW-UP ACTION IS A MAJOR ELEMENT OF THE METHODOLOGY OF THIS PROJECT, IT IS INTENDED THAT THIS PROJECT BE SELF-PERPETUATING IN EACH OF THE TARGET CITIES; C) THE PROJECT CAN BE REPLICATED IN OTHER COMMUNITIES AND WITH ADDITIONAL TARGET GROUPS ONCE BIDEN PELL FUNDS HAVE BEEN EXHAUSTED.

THE PARTICIPATION OF MANY VARIED ORGANIZATIONS IN THIS EDUCATIONAL PROCESS IS ESSENTIAL. IN ADDITION TO THE VARIOUS TARGET GROUPS DEFINED

EARLIER, OEF HAS ACTIVELY SOUGHT THE PARTICIPATION OF OTHER INTERNATIONAL VOLUNTARY ORGANIZATIONS LOCATED IN THE PROJECT CITIES. WHILE MANY MIGHT THINK THAT GROUPS SUCH AS THE PEACE CORPS SERVICE COUNCIL, AFRICARE, U. N. ASSOCIATIONS, THE FOUNDATION OF THE PEOPLES OF THE SOUTH PACIFIC, ETC. MIGHT BE NATURAL COMPETITORS FOR FUTURE FUNDING SOURCES, I THINK THAT WE ARE ALL DISCOVERING INSTEAD THAT COOPERATIVE EDUCATIONAL EFFORTS EXPAND EACH OF OUR INDIVIDUAL ORGANIZATIONS' FUTURE OPPORTUNITIES FOR CREATING COMMITTED CONSTITUENCIES. AS ONE OF THE OUTCOMES OF THE WOMEN AND WORLD HUNGER PROJECT HAS BEEN INCREASED VOLUNTEER RECRUITMENT, IT IS INTERESTING TO NOTE THE COOPERATION BETWEEN PARTICIPATING ORGANIZATIONS TO GUARANTEE THAT EACH VOLUNTEER ENDS UP WORKING WITH THE ORGANIZATION MOST APPROPRIATE TO THEIR INTERESTS AND ASPIRATIONS.

BASED ON OUR EXPERIENCES TO DATE, OEF IS ALSO INCREASINGLY ENCOURAGING CONTINUING EDUCATION INSTITUTIONS AND COMMUNITY COLLEGES TO COLLABORATE WITH LOCAL COMMUNITY GROUPS IN THIS PROJECT. THESE EDUCATIONAL INSTITUTIONS HAVE CONSIDERABLE ACADEMIC, MATERIAL, AND FINANCIAL RESOURCES. OEF HAS EXPERTISE IN OUTREACH TO COMMUNITY CONSTITUENCIES. IN MANY CITIES SUCH INSTITUTIONS OF HIGHER LEARNING HAVE ALSO PROVIDED THE OPPORTUNITY TO CREATE A PERMANENT AND ACCESSIBLE CENTER FOR THE WRITTEN AND VISUAL MATERIALS ON THE THEME OF WOMEN AND WORLD HUNGER THAT WERE GENERATED DURING THE PROCESS OF PLANNING THESE WORKSHOPS. IN THIS WAY, THE WOMEN AND WORLD HUNGER PROJECT BECOMES "INSTITUTIONALIZED" IN A GIVEN TARGET COMMUNITY.

A PRIME EXAMPLE OF THIS COLLABORATION IS THE CASE OF OEF's WORK WITH UCLA IN LOS ANGELES. AS MICHAEL LOFCHIE, DIRECTOR OF THE AFRICAN STUDIES CENTER AT UCLA STATED IN A LETTER TO OEF PRESIDENT WILLIE CAMPBELL:

> ONE OF THE MANDATES OF A PROGRAM SUCH AS OURS HAS TO DO WITH 'OUTREACH' TO THE BROADER COMMUNITY. BY ASSOCIATING WITH OEF, WE ARE ABLE TO IMPLEMENT THIS CRITICAL OBJECTIVE. IT IS IMPERATIVE THAT DISCUSSION OF THIS ISSUE BE TAKEN UP BY THE DIVERSE MEMBERS OF THE LOS ANGELES COMMUNITY. WORKING TOGETHER, WE ARE ABLE TO INVOLVE A TRUE CROSS SECTION OF INDIVIDUALS AND ORGANIZATIONS IN OUR ENTERPRISE.

THAT WAS A STATEMENT MADE AT THE BEGINNING OF OUR PARTNERSHIP. SINCE THEN OEF AND THE AFRICAN STUDIES CENTER HAVE GONE ON TO SPONSOR A HIGHLY SUCCESSFUL AND WELL ATTENDED WEEKEND CONFERENCE. TOGETHER WE ARE CO-PUBLISHERS OF A BOOK JUST SENT TO PRESS CONTAINING THE COMPLETE PROCEEDINGS FROM A PARTICULARLY ILLUSTRATIVE AFTERNOON SESSION. THE BOOK ALSO PRESENTS A PLAY COMMISSIONED FOR THIS PROJECT, WRITTEN BY A YOUNG NIGERIAN THEATRE ARTS STUDENT ON WOMEN FOOD PRODUCERS IN HER COUNTRY. AT THEIR EXPENSE, AND ALSO WITH THE COLLABORATION OF OEF, THE AFRICAN STUDIES CENTER IS PUTTING TOGETHER A PUBLICATION SUMMARIZING ALL OF THE SALIENT FEATURES OF OUR CONFERENCE, PRESENTING THE WORDS TO SOME OF THE MORE MEANINGFUL SONGS SUNG BY OUR INTERNATIONAL ENTERTAINERS, AND INCLUDING EXPLANATIONS OF THE SYMBOLIC MEANING OF CERTAIN PARTS OF THE CLOSING EVENING'S ENTERTAINMENT. WHILE THE BOOK IS TARGETTED FOR ACADEMICS AND PROFESSIONALS IN THE FIELD, THE LATTER PUBLICATION IS GEARED TOWARDS THE GENERAL PUBLIC, PARTICULARLY THE CONFERENCE ATTENDEES, AND WILL BE CIRCULATED FREE OF CHARGE.

BENEFITS

BASED ON PAST EXPERIENCE, THE LEARNING DOES NOT END WHEN THE WORKSHOPS ARE OVER. THE TARGET GROUPS AFFECT AN OUTREACH TO GROUPS OTHER THAN THEIR OWN IN FOLLOW-UP ACTIVITIES. IN ALL OF THE CITIES WHERE OEF DEVELOPMENT EDUCATION PROGRAMS HAVE BEEN ORGANIZED, MEMBERS OF THE ORIGINAL PLANNING COMMITTEES FORMED SUBSEQUENT CORE GROUPS AND HAVE CONTINUED ACTIVITIES.

IN SANTA BARBARA, A RESOURCE COLLECTION OF WOMEN AND FOOD MATERIALS HAS BEEN ASSEMBLED AND IS BEING HOUSED AT THE "LOS NINOS" HEADQUARTERS OFFICE. A SPECIAL STUDY GROUP WAS FORMED BY THE OEF CONFERENCE ORGANIZERS WITHIN THE SANTA BARBARA HUNGER COALITION, TO SPECIFICALLY CONTINUE STUDIES

AND FOCUS PUBLIC ATTENTION IN THAT COMMUNITY ON WOMEN, HUNGER AND FOOD PRODUCTION ISSUES.

SAN DIEGO CONFERENCE PLANNERS CONTINUE TO HOLD MONTHLY MEETINGS WITH DIFFERENT SPEAKERS FOCUSING ON DISTINCT WOMEN IN DEVELOPMENT ISSUES. A GREAT EMPHASIS IS BEING PLACED ON PLANNING FOR THE U.N. DECADE FOR WOMEN CONFERENCE IN NAIROBI NEXT YEAR.

IN LOS ANGELES, AS MENTIONED EARLIER, SEVERAL PUBLICATIONS ARE FORTHCOMING AS A RESULT OF THE UCLA/OEF PARTNERSHIP. CONFERENCE PLANNERS ARE CONSIDERING PRODUCING THE PLAY WRITTEN BY ONE OF THE PARTICIPANTS ON WOMEN FARMERS IN NIGERIA, AND UTILIZING AUDIENCE PARTICIPATION TECHNIQUES. SEVERAL PARTICIPANTS ARE INTERESTED IN ASSISTING THE LOS ANGELES OEF OFFICE INITIATE A NEWSLETTER BETWEEN PARTICIPANTS FROM ALL THE CITIES WHERE THIS PROJECT HAS TAKEN PLACE, TO SHARE INFORMATION, IDEAS AND FOLLOW-UP PROJECTS.

ALREADY SOME INTERACTION BETWEEN CITIES HAS TAKEN PLACE. FOR EXAMPLE, REPRESENTATIVES FROM BOTH THE SAN DIEGO AND SANTA BARBARA 1983 CONFERENCE PLANNING COMMITTEES PARTICIPATED IN THE 1984 LOS ANGELES CONFERENCE. SUBSEQUENTLY, TUCSON CONFERENCE PLANNERS WHOSE OWN EVENT FOLLOWED THAT OF LOS ANGELES' BY TWO MONTHS, ACTIVELY SOUGHT THE ADVICE OF THE LOS ANGELES STEERING COMMITTEE. SEVERAL WORKSHOP LEADERS FROM THE LOS ANGELES PROJECT ALSO PARTICIPATED IN THE TUCSON CONFERENCE AT THEIR OWN EXPENSE.

IN DENVER, AS PART OF THEIR POST-PROJECT COMMITMENT, STEERING COMMITTEE MEMBERS HAVE REDIVIDED INTO FIVE NEW SUBCOMMITTEES TO CONTINUE STUDYING AND FOCUSING ATTENTION ON THE FOLLOWING ISSUES AND PROJECTS: THE END OF THE DECADE FOR WOMEN CONFERENCE IN NAIROBI; THE DESIGN OF A CURRICULUM

APPROPRIATE FOR THE LOCAL SCHOOL SYSTEM TO CREATE AN AWARENESS AMONG STUDENTS OF WOMEN AS FOOD PRODUCERS; THE CREATION OF A BIBLIOGRAPHY AND RESOURCE CENTER FOR LOCALLY AVAILABLE WRITTEN AND VISUAL MATERIALS ON THIS THEME; AN EDITED VIDEO TAPE AND A WRITTEN REPORT OF THE CONFERENCE PROCEEDINGS TO BE CIRCULATED WIDELY THROUGHOUT THE DENVER COMMUNITY; AND THE STIMULATION OF NETWORKING AMONG ORGANIZATIONS AND THE SHARING OF RESOURCES TO CONTINUALLY EXPAND THE PUBLIC AWARENESS OF THESE ISSUES.

OEF IS COMMITTED TO FURTHER REPLICATION OF THIS THEME TO OTHER TARGET GROUPS AND COMMUNITIES. THE TECHNIQUES LEARNED IN THIS PROJECT, THE MATERIALS PREPARED SPECIFICALLY FOR IT, OR THOSE THAT HAVE RESULTED FROM IT, WILL BE PERMANENT TOOLS FOR OEF AND ALL PARTICIPANTS TO USE IN EXPANDING THESE GOALS TO ACHIEVE AWARENESS AND ACTION ON THE THEME THROUGHOUT EVEN GREATER AREAS OF THE COUNTRY.

THE FUTURE

WHAT WILL ULTIMATELY DETERMINE THE CONTINUING SUCCESS OF OEF'S DEVELOPMENT EDUCATION PROGRAM WILL DEPEND ON WHETHER THE NECESSARY FUNDS CAN BE GENERATED FOR ITS CONTINUATION AND GROWTH.

BEFORE BIDEN-PELL FUNDS WERE AVAILABLE, OEF EFFORTS TO RAISE CORPORATE AND FOUNDATION MONIES FOR DEVELOPMENT EDUCATION PROGRAMS MET WITH AN ESSENTIALLY NEGATIVE RESPONSE. THE BIDEN-PELL AMENDMENT OF THE INTERNATIONAL SECURITY AND DEVELOPMENT COOPERATION ACT OF 1980 HAS PROVIDED ESSENTIAL, IF MODEST, START-UP FUNDS FOR OUR DEVELPOMENT EDUCATION PROGRAMS. IT HAS ALSO CALLED ATTENTION TO THE NEED FOR SUCH FUNDS AND TO THE CONGRESSIONAL COMMITMENT TO INITIATE THE FUNDING PROCESS.

IT IS OUR HOPE THAT BIDEN-PELL MONIES WILL CONTINUE TO BE MADE AVAILABLE TO OEF AND OTHER PRIVATE OVERSEAS DEVELOPMENT ORGANIZATIONS --AND AT HIGHER LEVELS. IT IS ALSO OUR HOPE THAT CONGRESS AND THE AGENCY FOR INTERNATIONAL DEVELOPMENT WILL BEND EVERY EFFORT TO ENCOURAGE PRIVATE FUNDING SOURCES TO HELP UNDERWRITE THE COSTS OF WIDESPREAD DEVELOPMENT EDUCATION PROGRAMS.

FINALLY, IT IS OEF'S CONSIDERED OPINION THAT DEVELOPMENT EDUCATION PROGRAMS SHOULD GO WELL BEYOND EDUCATING AMERICANS AS TO THE EXISTENCE AND EXTENT OF THE PROBLEMS OF HUNGER AND POVERTY. AMERICANS SHOULD BE HELPED TO UNDERSTAND THAT THERE ARE RECOGNIZED PRACTICAL SOLUTIONS. ALTHOUGH THE HUNGER PROBLEM IS COMPLEX AND THE SOLUTION REQUIRES DIVERSE AND COMPLEMENTARY EFFORTS, OEF'S EDUCATIONAL PROGRAMS AIM TO DEMONSTRATE THAT FOOD PRODUCTION CAN BE SIGNIFICANTLY INCREASED BY GIVING WOMEN FARMERS THE SKILLS, THE TECHNOLOGY AND THE ACCESS TO CREDIT THEY SO DESPERATELY NEED.

PREPARED STATEMENT OF BEVERLY TANGRI, DIRECTOR OF RESEARCH, THE HUNGER PROJECT

Mr. Chairman and Members of the Committee. My name is Beverly Tangri. My position with The Hunger Project is Director of Research. The Hunger Project's Executive Director, Joan Holmes, is currently working in London and is not able to be here today. It is my privilege to represent The Hunger Project on her behalf.

INTRODUCTION

The Hunger Project is a seven-year-old, nonprofit, charitable organization whose stated purpose is to create the end of the persistence of hunger by the turn of the century as an idea whose time has come.

Since The Hunger Project was established in 1977, more than 2.8 million individuals in 138 countries have enrolled themselves in the Project.

Enrollment in The Hunger Project begins with individuals sharing the basic facts of world hunger in one-to-one conversations and small group meetings. Enrollment is a declaration by each individual that the end of the persistence of hunger is his or her personal responsibility. In signing an enrollment card, the individual declares: "The Hunger Project is mine completely. I commit myself to making the end of the persistence of hunger and starvation an idea whose time has come." Currently, around the world, approximately 1,000 people a day make this declaration.

Individuals enroll themselves in The Hunger Project in their homes, offices, parks and shopping malls, on beaches and streets - wherever they live, work and gather.

Through the process of enrollment and by confronting the issue of hunger, perhaps for the first time, each individual gives himself or herself the opportunity to take a stand for the end of hunger and to express that stand in whatever way is appropriate.

PURPOSE OF THE HUNGER PROJECT

In study after study, national and international commissions, including the Presidential Commission on World Hunger, the National Academy of Sciences and the Brandt Commission, have come to the conclusion that humanity now possesses the resources, technology and know-how to end hunger on our planet. What we are lacking, they say, is the neccessary will or commitment to get the job done.

The Hunger Project's purpose is to create the individual will, the popular and political commitment that will result in the eradication of the persistence of hunger over the next 16 years.

In order to measure its stated purpose, The Hunger Project has set as its goal an infant mortality rate (IMR) of 50 or less in every country of the world by the year 2000.

The IMR is the number of deaths of infants under one year of age per 1,000 live births in a given year.

Several organizations, including UNICEF, the World Health Organization and the Overseas Development Council, have chosen an IMR of 50 or below as the indicator of whether a country is meeting its basic needs including adequate nutrition.

The adoption of this measure allows The Hunger Project to focus its activities and more clearly define the impact of its work.

THE HUNGER PROJECT'S WORK

The Hunger Project's activities are designed to educate and inform people about the fact that hunger exists, it doesn't need to and that individuals can make a difference in ending it.

The Hunger Project raises public awareness about the issue of hunger and encourages and supports individual and community participation in the work of ending it.

Hunger Project activities are carried out on an ongoing basis in 20 countries -- Austria, Australia, Belize, the British Isles, Canada, Denmark, France, India, Ireland, Israel, Jamaica, Japan, Mexico, the Netherlands, New Zealand, Nigeria, Sweden, Switzerland, West Germany and the United States.

SPECIFIC ACTIVITIES

THE ENDING HUNGER BRIEFING

The Hunger Project has devised a four-hour presentation entitled the Ending Hunger Briefing which allows participants to know the essential facts about hunger, indicates where the world now stands in the process of ending hunger and invites individuals to look at what they will do to further the process of ending hunger.

Since the Ending Hunger Briefing was first presented in January 1982, almost 150,000 people have participated in it in the U.S. including more than 67,000 high school students. The Ending Hunger Briefing is also conducted on a regular basis in Canada and the British Isles.

In addition to school and college students, people from all walks of life have participated in the Ending Hunger Briefing including health workers, laborers, journalists, business professionals, educators and representatives of religious and other private voluntary organizations.

The Ending Hunger Briefing was developed by The Hunger Project in partnership with experts in the fields of hunger and international development. It is not, however, analysis and discussion alone. Rather, it informs people about hunger in a way that they have an experience of the issue and are moved to take action.

For example, individuals who have participated in the Ending Hunger Briefing have, among other things, written to their Congressional representatives and local media about the issue of hunger; participated in TV and radio programs on the subject; sponsored children from developing countries; joined the Peace Corps or private voluntary organizations; become volunteers at their local food bank and taken the Briefing into their schools, offices and communities.

The Ending Hunger Briefing is conducted by more than 300 Hunger Project volunteers who have completed a rigorous training program to enable them to present the material effectively.

PUBLICATIONS

Three times a year, The Hunger Project publishes its newspaper--A Shift in The Wind, the world's largest-circulation publication on hunger, which is sent to more than 1.5 million households. In addition, special mailings of each issue are sent to tens of thousands of leaders and key opinion makers around the world.

Recent editions of the newspaper have focused on such issues as the urgent problems facing the people of Africa, the work being done by UN agencies to end hunger, the progress being made by hungry people themselves in ending hunger and the decline in recent years in hunger-related deaths. The next issue of A Shift in the Wind, to be published in the Fall, will be devoted to what actions individuals in the world can take to end hunger.

The Hunger Project also publishes World Development Forum, a semi-monthly newsletter of facts, trends and opinion in international development which is sent to more than 10,000 key individuals in the news media, development organizations, government, and corporate and academic communities.

The Forum has reported on a wide variety of topics including village-level approaches to family planning and education, rural solutions to the desertification of farmland and the discovery of new and affordable controls for such diseases as leprosy and malaria.

World Development Forum is edited by Peggy Streit, a Washington, D.C.-based journalist who edited the newsletter when it was published by the U.S. Agency for International Development.

The Hunger Project has also recently launched a new publication--The Hunger Project Papers, a series of occasional papers on subjects of particular interest to scholars and development experts. The first paper, entitled "The Decline in Hunger-Related Deaths," was written by Dr. Roy Prosterman, Professor of Law at the University of Washington and an eminent authority on world hunger. More than 11,000 copies of this first paper were distributed in the U.S. and selected countries abroad.

The Hunger Project also makes a special effort to educate and inform its donors through a monthly series of pamphlets. These communications have covered a wide variety of topics such as the Brandt Commission's Report on the North-South dialogue, the work of Sarvodaya, the grass-roots community-based movement that has helped to transform life in rural Sri Lanka; the Peace Corps and PL 480, the Food for Peace program.

In 1985, The Hunger Project will publish its first book--Ending Hunger: An Idea Whose Time Has Come. This publication will be a comprehensive discussion of the major issues critical to humankind in its endeavor to end hunger. Issues explored in depth will include population, food, national security, foreign aid and the new international economic order. Differing viewpoints on each issue are presented.

Ending Hunger: An Idea Whose Time Has Come, is written for the grass-roots participants who are working to end hunger and will make the complex debate surrounding hunger accessible. In addition, we believe it will be a valuable resource to educators, policy makers, media representatives, members of private voluntary organizations and community leaders.

GRASS-ROOTS NETWORK OF VOLUNTEERS

The Hunger Project was created in recognition of, and in partnership with, the thousands of individuals and organizations working toward the alleviation of hunger. Although The Hunger Project was first launched in the United States, it is a global endeavor that is an expression of the personal commitment of millions of individuals living in nearly every country in the world.

To further this objective, more than 3,000 committed individuals in approximately 250 communities around the world take part on a weekly basis in The Hunger Project's grass-roots network of volunteers. In every Hunger Project program, from enrollment to Ending Hunger Briefings, from public awareness programs to fund raising, these volunteers bring to their communities the opportunity to play an active role in making the end of the persistence of hunger a reality.

For example:

* In 1983, Hunger Project volunteers gathered more than 125,000 signatures in support of a petition to the U.S. Postal Service, to issue a stamp with the end of hunger by the turn of the century as its subject.

* In Monterey, California, local Hunger Project volunteers presented the Ending Hunger Briefing to more than 200 people, including three mayors, two county board supervisors and representatives of six local hunger organizations. The event was covered on three radio talk shows and on local TV.

*In celebration of the third annual World Food Day, Hunger Project volunteers distributed a radio public service announcement to more than 600 stations across the U.S. This announcement brought to citizens in 41 states an ending hunger message from Millicent Fenwick, U.S. representative to the UN Food and Agriculture Organization.

CONCLUSION

Each year between 13 and 18 million human beings die as a result of hunger and hunger-related diseases on our planet. To end this tragedy once and for all will require a breakthrough in our commitment.

The creation by Congress of the Select Committee on Hunger provides an opportunity to forward the work of ending hunger. The interest and commitment of members of this Committee are very clear and these hearings are a very important step in the process.

On behalf of The Hunger Project, thank you for the opportunity to participate in these hearings.

BOARD OF DIRECTORS

The following individuals serve as the Board of Directors of The Hunger Project.

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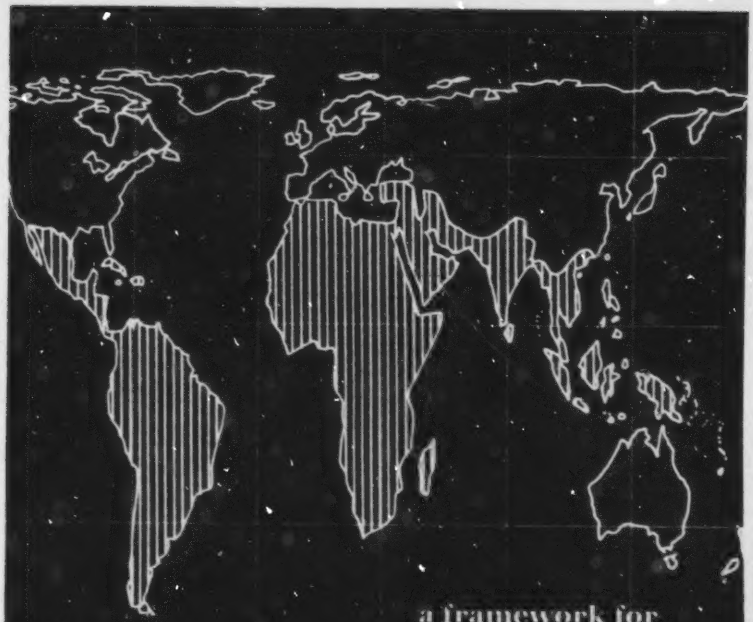

a framework for
DEVELOPMENT
EDUCATION
IN THE UNITED STATES

The publication of this booklet has been made possible through a gift by Save the Children Federation, Westport, Connecticut.

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A Note to the Reader

For most of us in the United States, the word "development" probably conjures up images of high rises and parking lots; if we're organizationally minded, we may associate the term with fundraising. But for professionals around the world who work to eliminate the symptoms of mass poverty—hunger, disease, illiteracy and injustice—and their deep-rooted causes, development means something else.

It means establishing higher living standards for the hundreds of millions who regularly go without the barest essentials—living standards that not only fulfill people's basic needs, but provide enough material stability that they can pursue their own social, political and economic aspirations. Development can occur at a local, national or global level. But if it is to have impact on the poverty found on a mass scale in the Third World and also in corners of our own wealthy country, development must occur on all three levels.

A Framework for Development Education in the United States is founded on the premise that development must become a reality if we are to have economic and political stability, and if we are to have peace. The *Framework* further assumes that the public must be educated by every means available to care about and insist upon development as a major national policy objective. We have sent this document to you because your work has a bearing on our goal of developing a decent and dignified life for all people, and thus on the educational task before us.

We believe that there is a close relationship between the educational efforts of the development community and those of environmentalists, advocates of civil rights, women's rights and human rights, the peace movement, and those striving for reform in a wide variety of human institutions. We share the commitment to seek societal changes that will improve the quality of life for the many, and not just the privileged few, and we pursue these changes by raising public awareness and appealing to the conscience of our citizenry.

Furthermore, our issues often overlap and with the passage of time seem to be converging. Many of us in development education feel that the time has come to reach out to the coalitions and groups whose goals intersect ours, and to pose this question: Do we have sufficient commonality of interest to work together, to cooperate and even collaborate on educating Americans to help shape a future in which humanity can thrive?

As you study this *Framework*, we hope you will consider this question and choose to join forces with us. Our national action plan is in a state of continual evolution and will benefit from the suggestions of anyone who shares our concerns. If you would like to reach any of us directly, lists of those most closely involved with this *Framework* can be found at the end of this booklet. You can also contact the professional associations that sponsor us: PAID (Private Agencies in International Development) and ACVAFS (American Council of Voluntary Agencies for Foreign Service). Their phone numbers and addresses are on page 14.

We are prepared to provide additional information to any of you who wish to know more about our work. We can supply background material, arrange for you to receive descriptions of development education programs now under way, and provide the opportunity to receive regular mailings in the future. We invite your questions, your comments, and above all, your participation in this national educational campaign.

The Joint Working Group on
Development Education

“The Framework for Development Education in the United States suggested by voluntary organizations working both here and abroad will serve a vital need in the public's education about Third World countries and how their problems and our problems are explicitly related.

Voluntary organizations' valuable experience should be utilized in this important program.”

The Honorable
Andrew Young
Mayor
City of Atlanta

a framework for DEVELOPMENT EDUCATION IN THE UNITED STATES

Save the Children Photo

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PAID:		**ACVAFS:**
Private Agencies in International Development	and	American Council of Voluntary Agencies for Foreign Service

April 1984

PREFACE

An Historic Turning Point

John G. Sommer
Co-Chair Joint Working Group

Most private and voluntary organizations (PVOs) in the United States concerned with helping poor people in other countries have focused on providing material and technical resources to needy communities in those countries. Beginning with relief and welfare aid in the immediate aftermath of World War II (even earlier in some cases), and continuing through the recent emphasis on development assistance, the assumption has been that the surest way to alleviate poverty is to help those most in need to help themselves—to achieve self-reliance.

Recognition of a Need: In recent years we have seen increasing frustration among Americans with the limitations and contradictions of foreign aid in this process. Building self-reliance at the grass roots is difficult and complex, particularly given the often negative effects of outside policies and events over which the poor—and those who work with them—have no control. Examples of these include the introduction of government trade barriers, promotion of consumer products injurious to health, foreign aid cutoffs for purely political reasons, the use of food as a political and economic weapon, and emphasis on military build-ups over economic development. Consequently, the central role of larger economic and political policies has come to the fore, and with it the need for an informed U.S. public that understands development concerns and can influence the enactment of policies favorable to development.

We have come to believe that PVOs can and should play an important role in assisting our constituencies and the American public at large to understand and act on issues related to development and global interdependence. Several factors combined to make this the strategic time for PVOs to take such initiatives:

- PVOs themselves are increasingly aware of causes of world poverty and the appropriate responses to it;
- the impact of global interdependence on both our own daily lives and those of people in the Third World has become more evident;
- European and Canadian development education efforts have shown us by example that PVOs can be an effective force.

Organizational Initiatives: A sign of the new importance attached by our private and voluntary organizations to development education was the decision in 1980 of PAID (Private Agencies in International Development) to make development education one of its three major areas of organizational concern, along with federal relations and private funding. The PAID concern parallels that of the American Council of Voluntary Agencies for Foreign Service (ACVAFS) which had already formed a subcommittee on development education.

Initially, the separate and collective activities of the two focused largely on sharing information about approaches to development education,

> ***❝I am happy to learn of the increasing attention being given by American private and voluntary organizations to development education activities in the United States. The PAID/ACVAFS Joint Working Group statement and action plan constitute an important step forward in helping the American people understand the urgency of finding solutions to problems of Third World poverty—solutions that, in our increasingly interdependent world, will benefit not only the poor but people in the industrialized countries as well.***
>
> ***Although a number of European voluntary organizations have been engaged in development education activities for some time, it is clear to me from my work on the Independent Commission on International Development Issues that the U.S. role, by virtue of your country's example and economic power, is most critical. I therefore commend your efforts and look forward to following their progress and seeing them bear fruit in the months and years ahead.❞***
>
> ***Willy Brandt***
> ***Chairman***
> ***Independent Commission***
> ***on International***
> ***Development Issues***

and on differentiating between development education and the quite different kinds of information that are propagated through fundraising and public relations activities.

In an attempt to reach a clear common understanding of the purposes and action potential of development education, the PAID Task Force on Development Education sponsored a retreat in June 1983 at The Experiment in International Living in Brattleboro, Vermont. Participants included U.S. and Canadian specialists in this field. The retreat followed an earlier workshop on media and communications techniques for development education which brought together members of the PVO community and public information and media experts. In August 1983 the PAID Task Force and the ACVAFS Sub-committee came together to form a Joint Working Group on Development Education.

The document that follows, while in no way able to convey all the depth and nuance of the thinking, summarizes major conclusions of the Vermont retreat and the Joint Working Group. It presents a framework for planning and implementation of development education by the U.S. PVO community in the months and years ahead.

A Critical Prerequisite: No one pretends that the task is small. But if the goal of private and voluntary organizations is to help eliminate poverty and achieve justice and equity, then development education is a critical prerequisite to achieving the quality and scale of response required to meet that goal. Notwithstanding the human tendency to elevate the importance of one's concern of the moment by declaring it the subject of an "historic turning point," many of us believe that we are indeed at such a point. In both the United States and around the world, there is a growing feeling that public policies, and understanding of policy implications, are as essential in eliminating poverty as development assistance programs themselves. There is an increasing willingness among private and voluntary agencies to come together as a community and to cooperate in broader ways. And there seems to be an emerging interest in establishing partnerships with broader affinity groups who share our overall concerns for a better world and who may have important connections going beyond our relatively limited constituencies.

Development Education: A Statement, Program Guidelines, and an Action Plan: What follows is in three major parts. First is a statement of what is meant by development education. The statement is intended to clarify and spur discussion within private and voluntary organizations concerned with development. Second are guidelines on the content and methodology of development education for the U.S. PVO community as a whole. The ACVAFS/PAID Joint Working Group is prepared to take the lead in implementing the program, but the proposal also contains ideas on which individual agencies can draw for their own programs.

Two tactical points that appear in the *Framework* are sufficiently new and critical to warrant special attention. First is the need in our education efforts to start with the issues of concern to our constituencies, rather than with what we may think they should know. This will mean increasing our effort to link global issues and local concerns. Second, because development specialists represent a relatively small group—though with millions of potential allies—we should, if we want to place development issues on the national agenda, make common cause with broader, like-minded groups, especially those that have mastered the techniques of public education and action. As one of the participants in the Vermont retreat noted, we should learn from the nuclear freeze movement. Our cause, it can be argued, is no less important. Ending poverty and achieving equity and justice, like controlling the weapons of nuclear destruction, are critical to human survival.

PART 1

DEVELOPMENT EDUCATION:
A Statement for Private and Voluntary Organizations

Development education has as a primary goal the building of a committed constituency for development both at home and abroad. It begins with a recognition of global interdependence and the continuing need for justice and equity in the world. Its programs and processes convey information, promote humanitarian values, and stimulate individual and community action aimed at improving the quality of life and eliminating the root causes of world poverty.

INFORMATION

Development education conveys knowledge:

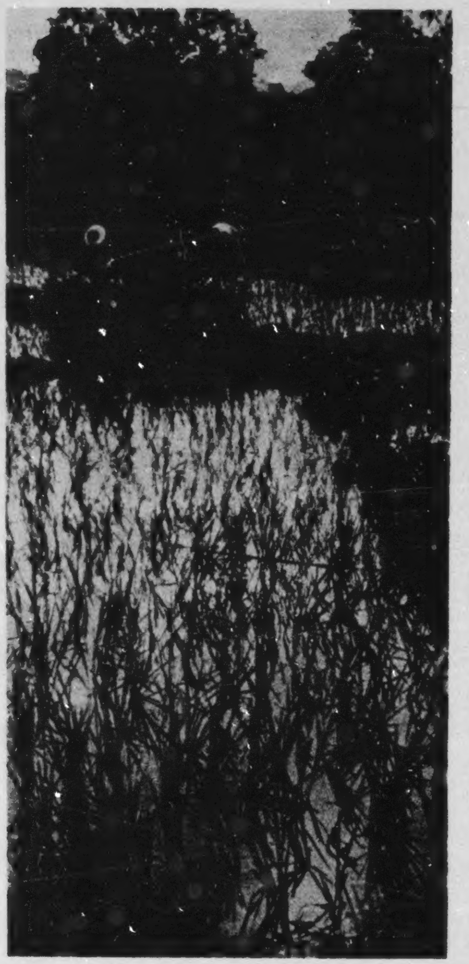
- by disseminating analyses of impediments to genuine development, particularly conditions of poverty and hunger in the Third World and their relationship to First World affluence;
- by reporting on people and nations struggling for a better life, and the social, political, and economic context within which development efforts are being made;
- by presenting the facts that document the reality of global interdependence, mutual interest, and common threats and concerns; and the inextricable link between local and global problems and their solutions;
- by familiarizing the public with transnational inequities and conflicts that inhibit people's capacity to achieve their own goals for a decent quality of life;
- by making known the wide variety of structures and models through which development, in all its diversity, occurs.

Save the Children Photo

VALUES AND ATTITUDES

Development education promotes a concern for justice and equity:

- by instilling respect for women and men of all cultures and their differing traditions, skills, beliefs, and expressed needs;
- by encouraging a sense of personal responsibility for assisting development;
- by helping people to clarify the relevance of their values in relation to world hunger and poverty;
- by promoting an acceptance of global interdependence as an irrefutable fact of life upon which action must be based;
- by fostering the understanding that sharing and cooperation are not only the most efficient but the most desirable means to improving the prospects for global security.



ACTION

Development education stimulates change:

- by seeking collaboration between rich and poor people at all levels of problem solving;
- by motivating citizens to address both short-term and long-term development problems;
- by encouraging the personal and structural changes needed to meet both local and global need;
- by developing the competence to influence public policy;
- by coalition-building among groups that share similar values.

Development education thus provides a framework within which individuals and groups of all ages can become informed about and contribute to the development process on the local, national, and international levels. Development education has the responsibility of bringing about behavioral change as it addresses the critical problems and unique opportunities of our global society. It emphasizes individual and group commitment and action in building personal and political will to eliminate poverty and injustice through social and economic development.

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PART II
Program Guidelines for Development Education

The program guidelines that follow constitute the foundation for the *Framework's* Action Plan. They are also designed to be used by PVOs planning their own development education programs.

> ***"I wish to commend you and your colleagues of the ACVAFS/PAID Joint Working Group for the significant contribution you are making in the area of Development Education, as evidenced by your recent publication, "A Framework for Development Education in the United States.""***
>
> **M. Peter McPherson**
> **Administrator**
> **U.S. Agency for International Development**

GOALS AND OBJECTIVES

The overall goal of development education is to create a level of public understanding, promote values, and stimulate actions that:

- recognize the interdependence of the world's people and particularly the commonality of interests between the United States and the developing world;
- contribute concretely to eliminating root causes of world poverty and inequity and to removing obstacles to development.

The objectives of development education programs are:

- to place development on the national agenda for the general public;
- to raise the awareness, commitment, and competence of PVOs in development education.

GUIDING PRINCIPLES

Development education, like any education, is a learning *process* and takes into account both the feelings and the knowledge of those who participate in the process. It provides access to information and creates a climate conducive to the following:

- identifying a problem, its implication for the person or group, obstacles to the solution, and the elements that can be solved through individual or group initiative;
- examining a wide range of possible solutions, using available resources and anticipating possible consequences;
- deciding to act, or not to act, on the basis of analysis;
- organizing to take action;
- assessing the results.

Development education programs must utilize and build upon the concept of *pluralism*— a special experience and strength of the United States. Considering the variety and differences that exist among segments of the public and within the PVO community, a wide spectrum of activities must be encouraged and used.

KEY ELEMENTS OF A STRATEGY

1. PVO experience with people who suffer from poverty and hunger confirms that all development-related activities—including education—should be based on the principle of equal *partnership*. This principle emphasizes both what the United States can learn from the Third World in relation to our own development problems and what the Third World can learn from the United States. The sharing of perspectives and mutual learning should pervade every aspect of development education.

> ***"In an age of increasing interdependence, global hunger and poverty has become an issue of critical importance to the U.S. It is imperative that the American public recognizes better how conditions in less developed nations affect our nation. For that reason, I commend the Joint Working Group on Development Education for preparing a much needed, solid and thoughtful approach for furthering development education in the United States."***
>
> **Congressman**
> **Benjamin A. Gilman**
> **(R–NY)**

2. Effective selection of particular *target audiences* for development education will depend on the application of such established criteria as the following:

- the degree to which the audience is organized, accessible and responsive;
- the potential multiplier effect of the audience;
- the degree to which the audience is open to consideration of international issues;
- the degree to which it can influence change.

Based on these criteria, religious leaders, government officials, educators, media-based opinion makers and, of course, prominent members of PVO constituencies, are strategically important target audiences. Others include corporation executives, labor leaders, professional associations, grass roots organizers, special interest groups. These leaders must be reached through the communication channels they regularly use and should be encouraged to educate their constituencies about development.

3. Formulation and selection of clear and powerful *themes and messages* can reinforce development education programs. They will vary from time to time and from place to place but should be examined in terms of basic components:

- the significance and timeliness of the issue addressed;
- the accuracy of the information given;
- the relevance to the particular audience or group;
- the values conveyed,
- the action steps suggested.

Some examples of development education messages:

- Poverty in a world of plenty is unnecessary and unacceptable. Its causes are multiple and interlinked, and its many symptoms (hunger, malnutrition, illiteracy) cannot be eliminated without addressing these causes (e.g., maldistribution of resources; international and national inequities).
- America's well-being is dependent on global well-being. National security depends on international security. Resource allocations must take this into account.
- Individuals can make a difference even where basic societal changes are needed. Individuals working together can make a bigger difference.
- The world has the resources and the human capability to eliminate poverty. Much has been accomplished already.
- Many paths lead to development. There is no one model.

Themes and messages must relate to the learners' concerns rather than to the PVO community's special interests. What PVOs believe to be important about development may be remote and have little meaning for others. It is better, therefore, to focus on issues of immediate and local concern (unemployment, for instance, or food prices or immigration), and relate these to development and international issues.

4. Effective development education requires use of *appropriate means and media*, with attention to the following:

- natural settings (where target audiences can be found; e.g., in the halls of Congress, in meetings of special interest groups, in gatherings of religious leaders, in supermarkets and video arcades, in corporate offices);
- natural idioms (the language used and understood by these audiences);
- appropriate media (the means by which they can be reached).

5. Working in coalition with *affinity groups* is essential for effective PVO development education activities. The general public often views PVO concerns as precious, even arcane. To reach beyond such barriers and to achieve outreach, impact and consensus, PVOs should make common cause with related movements: human rights, peace, environment, women's rights, nuclear control. Collaboration on hunger and poverty issues should of course continue. To be effective, coalitions among affinity groups must be issue-specific and action-oriented. PVOs should seek to piggyback issues on related movements and to tie PVO concerns to current public problems.

6. In order to assess the effectiveness of development education activities, *evaluation tools and strategies* should be used by participating agencies. Evaluation will enable the development education community to measure response and to chart future directions wisely.

Development Education Programs:
A Sampler

Local and Community Organizations

- In Michigan, county task forces made up of community members and cooperative extension agents developed a variety of local programs on global poverty and the production, distribution and consumption of food—both in the United States and the Third World.

- Southern Arizona's connection to the less developed world is the theme of workshops for local church and school educators: they are informed and trained to present issues of world hunger and the role of donor nations in international development to their constituents.

Schools, Colleges and Universities

- Two multi-media traveling exhibits bring development right to the students: one is a hands-on experience for children ages 5–15; the other goes to student groups on college campuses and also provides resource kits for further study.

- Elementary and secondary students nationwide study hunger in class and then form student action groups. Students have raised funds, collected and served food, supported overseas projects, educated their communities, and made their concerns about hunger known to policy makers and the media.

Business and Professional Groups

- A nationwide program using speakers, press conferences, advertising campaigns, and the mailing of printed materials educates business leaders about the developing world and ways to assist its private enterprise.

- In the West and Southwest, a series of workshops for business and professional women's organizations examines the problems of world hunger and the role of women in food production.

The Media

- An organization that runs a Third World news service is holding a series of seminars for journalists; the aim is to increase the network of journalists who will write about the causes and effects of underdevelopment.

- Cash awards, presented by a well-known entertainer, are given each year to members of the media who most effectively present the issue of world hunger to the public. The awards ceremony held at the United Nations, further focuses press and public attention on the issue.

Groups with Specialized Interests and Constituencies

- Through workshops and written materials for existing publications, one organization educated the leaders of major black

> ***“I wish to commend ACVAFS/PAID for compiling "A Framework for Development Education in the United States." This comprehensive and well thought-out plan of action could go a long way in promoting the education of receptive groups as to the development process and possible measures they could take to alleviate the poverty suffered by so many of the world's population. Any organized and effective action in our pluralistic society must be based on the widespread understanding and support of the citizen at large. The "Framework for Development Education" is a first and necessary step forward in educating U.S. citizens to recognize that interdependence with the Third World is a fact of life and that many of the problems which the world faces today and will contend with tomorrow originate in developing countries. This realization in conjunction with the humanitarian values espoused by the "Framework" should help in forming a consensus as to effective actions concerned groups and individual citizens can take to promote indigenous modernization and keep change peaceful in the developing world.”***
>
> **The Honorable Harlan Cleveland**
> **Director**
> **Hubert H. Humphrey**
> **Institute of Public Affairs**
> **University of Minnesota**

institutions nationwide about development. A primary objective was to encourage U.S. racial minorities to become involved in collaborative programs with Third World communities.

- A coalition of over 300 organizations with a common interest in addressing the problem of global hunger, shares resources and plans local programs every year on October 16, World Food Day.

The General Public

- In one large western city, viewers received a basic introduction to the problems of hunger and development through a three-hour "televent." They were asked to volunteer not only money, but their time and commitment to help end hunger.
- One national organization provides schools, businesses, churches, service and recreation clubs with an audio-visual presentation on world hunger lasting anywhere from three to five hours.
- Commercial films, like "Gandhi," and national television shows like "The Day After," have been used to spark discussion groups and as the basis for local seminars. Additional development education programs are described in *Development Education Programs of U.S. Nonprofit Organizations,* published in 1983 by TAICH (Technical Assistance Information Clearing House). Edited by Florence M. Lowenstein, it is a directory of domestic development education programs sponsored by U.S. nonprofit organizations involved in overseas development assistance and is available from ACVAFS. It includes a description of the "Biden-Pell Amendment," which authorized AID to support development education efforts, and lists agencies that have received grants under the Biden-Pell Amendment.

PART III
ACTION PLAN AND IMPLEMENTATION

The program activities that follow are based on the preceding parts of this Framework and have been planned by the PAID/ACVAFS Joint Working Group on Development Education. Implementation of specific activities follows the approval process of the Joint Working Group which is outlined under Operational Procedures (page 00). Members of the Joint Working Group, as well as participants in each of the five Program Groups, are listed in a separate section at the end of this booklet (see page 15).

A. PROGRAM ACTIVITIES

1. Plan and Conduct Market Survey.

RESPONSIBLE
Market Survey
Group: Martin
Rogol, Convenor

Purpose: To determine what perceptions of development exist; what audiences are most strategic; what messages and media work; and what affinity groups are most appropriate for PVO development education programs.

Plan:	***Target Dates***
a. Conduct "mapping exercises" of PVOs using ACVAFS and PAID membership files and other appropriate sources.	completed 9/30/83
b. Review and analyze TAICH/ACVAFS survey of agencies engaged in development education. Publish directory.	completed 1/1/84
c. Consult information analysis firms for assistance on marketing strategy.	completed
d. Undertake secondary, exploratory, and descriptive research, which would review and analyze existing data, survey public opinion, and develop and test specific themes.	1/84–8/84

* * *

2. Develop Strategies Around Development Issues and Work With Coalitions and Affinity Groups.

RESPONSIBLE:
Coalitions and Development Issues
Group: Martin
McLaughlin Gene
Thiemann, and
Robert Wilson,
Convenors

Purpose: To bring national and international issues critical to development to the forefront of public concern; in this process, to establish common ground for cooperative efforts with coalitions and affinity groups.

Plan:	***Target Date:***
a. Identify significant issues and formulate appropriate strategies for each. Examples of such issues are: • The individual citizen's personal stake in global interdependence (e.g., the nature of poverty, the extent of domestic hunger and unemployment, motivations for foreign aid, value of overseas investments); • U.S. impact on the international system (trade, commercial lending, various kinds of aid, security policy);	12/83 on

Plans	*Target Dates*
• Food insecurity in sub-Saharan Africa including food aid as a development instrument, host country policies to provide production incentives for small farmers; • Trouble in our own backyard—social, economic, and political inequities in Central America and the Caribbean.	
b. Collaborate on education and action programs with groups such as: • Education leaders • Citizen exchange programs • Labor and corporate leaders • U.S. community-based groups • Women's groups • Religious groups • Environmentalists • Nuclear control movement • World affairs organizations	on-going
c. Plan strategy on selected issues, including coalition-building and local education action.	3/84 and on-going
d. Plan for discussion of development issues in national elections.	3/84–11/84
e. Plan and participate with coalitions and affinity groups in joint conferences.	on-going
f. Promote and implement programs with elementary and secondary schools and institutions of higher education.	12/83 and on-going

"A Framework for Development Education in the United States" is the most extensive statement on public education that we've ever seen, and we look forward to its implementation."

Kenny and Marianne Rogers
Sponsors, World Hunger
Media Award

* * *

3. *Facilitate Communications and Resource Sharing.*

RESPONSIBLE: Communications and Resource Sharing Group: Carrol Joy and Helen Seidler, Convenors

Purpose: To design communications vehicles that will assist PVOs in improving their development education skills and in educating the broader public on development issues; and to facilitate the sharing of educational resources and experience among PVOs in the United States, and between American PVOs and their counterparts abroad.

Plans	*Target Dates*
a. Publish quarterly journal for development education practitioners to include: • Substantive articles on development education; • Product reviews of development education "tools"; • Reviews of books on development education topics; • Calendar of important events; • Organizational profiles; • Current news/feature articles; • Letters to the editor; • Guest editorials.	1984 on
b. Gain access to the media for development issues through news services, media alerts, radio and television.	on-going
c. Produce white paper on development education.	Fall 1984
d. Provide training workshops to assist and stimulate development education programming in the PVO community.	Fall 1984
e. Design audio-visual presentations for use in development education programs.	Winter 1984

Plans	*Target Dates*
f. Plan computerized data system and other means for the exchange of development education information and dissemination of materials.	Fall 1984
g. Plan and conduct roundtables on Biden-Pell projects and PVO relationships with educational institutions.	completed 8/16/83 and 12/13/83
h. Promote and implement international cooperative ventures in development education such as: • International meetings under United Nations and other aegis. • Joint projects with PVOs from other countries.	on-going
i. Promote and implement U.S. regional activities sponsored by the International Development Conference, UNICEF, etc.	on-going
j. Set up development education consultant pool.	on-going
k. Plan one-day media workshop for PVO executive directors.	Winter 1984/85
l. Plan training workshop in improving writing and interviewing skills for effective use of the media.	Winter 1984/85
m. Follow up on Advertising Council campaign on development.	1985

* * *

4. Review and Formulate Evaluation Strategies for Development Education.

RESPONSIBLE:
Evaluation Group:
Nate VanderWerf,
Convenor

Purpose: To recommend and, where necessary, to design evaluation tools and strategies that will measure effectiveness in carrying out development education programs.

Plans	*Target Dates*
a. Gather and analyse all available evaluations of development education programs to serve as a resource. This will include such U.S. efforts as Mershon Center in Columbus and Kettering in Dayton, Ohio, as well as experience of other countries.	Spring 19[illegible]4
b. Cooperate with AID development education evaluation consultant.	on-going
c. Survey U.S. PVOs to learn from present and past evaluation efforts.	Spring/Summer 1984
d. Conduct at least two evaluation workshops.	Fall 1984/85
e. Devise methodologies based on experience and solid evaluation theory and encourage a commitment to an investment in evaluation by PVO community.	1985
f. Develop and maintain an Evaluation Resource Center and track the effectiveness of development education programs on a short- and long-term basis.	on-going

continued

"UNICEF welcomes this publication as a positive step toward raising the awareness of the American public about their connection and responsibilities to children in developing countries. The framework outlined is a concrete and viable one. Supported by private voluntary organizations and their broad-based constituencies, it has the potential to awaken concerned citizens across the country to the realization that it is now possible to make this world a healthier, safer place for all children. We need only the determination to make it happen."

James P. Grant
Executive Director
United Nations Children's
Fund (UNICEF)

5. *Develop Organizational and Financial Resources.*

RESPONSIBLE:
Organizational and Financial Resources Group:
John Sommer, Convenor

Purpose: To support the PVO community in its efforts to carry out development education in the United States by helping to mobilize the necessary organizational and financial resources.

Plan:	*Target Dates*
a. Consult with other key members in PVO development education movement to gain support for the *Framework for Development Education.*	9/83–11/83
b. Stimulate the development of resources from within the PVO community:	
• Develop plan whereby ACVAFS/PAID and PVOs will be encouraged, as a necessary step toward seeking outside funding, to specify their goals for allocating program resources to development education;	on-going
• Complete audit guidelines on development education, in cooperation with PVO Financial Managers Association;	Spring 1984
• Provide proposal writing workshops for PVOs.	Spring 1984
c. Encourage private sector support:	
• Plan and conduct seminar on private philanthropic and corporate support for development education in the next decade, in cooperation with the Committee on International Grantmaking of the Council on Foundations and in consultation with the Advisory Committee on Voluntary and Foreign Aid.	completed 2/84
d. Review and make recommendations on public support for development education:	on-going
• Meet with AID and leaders on Capital Hill for briefing on PVO development education plans.	12/83 and on-going
• Establish task force to consider structures and level of public support for development education;	11/83
e. Plan second retreat to review progress, undertake intensive future planning, and determine new initiatives.	1/83-3/84 for Summer, 1984

> ***“In a time of domestic budget cuts and increased resistance to foreign assistance programs, it is essential that the American public better understand and support the importance of these programs. Development education is crucial to this effort, and private voluntary organizations are uniquely suited to carry it out—a fact which the Congress has recognized in law. I hope that the “Framework” proves to be a catalyst for the broader development education needed to help alleviate hunger and poverty.”***
>
> **Congressman**
> **Dante B. Fascell (D–FL)**
> **Chairman**
> **House of Representatives**
> **Committee on Foreign Affairs**

OPERATIONAL PROCEDURES

> *Congratulations on the publication of "A Framework for Development Education in the United States." I believe your document will help Americans realize that truly we live in an interdependent world. All of us at Save the Children Federation will do everything we can to help implement the publication's important recommendations.*
>
> **Marjorie Benton**
> **Honorary Chair**
> **Board of Directors**
> **Save the Children**

Implementation of the foregoing Action Plan is guided by the PAID/ACVAFS Joint Working Group which consists of 22 members of the Development Education Committee who are most active in the field. The Committee is made up of approximately 70 individuals associated with PAID and ACVAFS who have demonstrated an interest in development education, and who advise the Joint Working Group as needed.

The Joint Working Group meets quarterly at which time it reviews, approves and coordinates specific implementation proposals from the five Program Groups appointed by it. The Program Groups are accountable to the Joint Working Group for timely completion and evaluation of their activities.

Each Program Group is made up of the following:

a. A convenor or convenors appointed by the Joint Working Group;
b. Advisors from the Joint Working Group, the Development Education Committee, or from other appropriate PVO entities;
c. Members from the PVO community;
d. ACVAFS/PAID staff support.

Each Program Group determines the most appropriate style for [illegible] operations and establishes sub-groups as needed. Activities the Program Groups would like to undertake are submitted to the Joint Working Group for approval. If funding is required beyond existing resources, these needs are submitted to the Joint Working Group for consideration along with proposed activities. Program activities endorsed by the Joint Working Group are then submitted to appropriate PAID and ACVAFS committees for approval.

PAID and ACVAFS are committed to implementing this development education initiative in concert with a number of additional groups and networks from within the PVO community. Of special importance are the Public Policy Committee, the Financial Managers Association, the Private Funding Task Force, TAICH, and the Information Services Committee.

So ambitious and comprehensive a program as this requires, in addition to the groups and organizations mentioned, the active participation of all those who consider development education a significant priority for our time.

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[From Horizons, Summer 1984]

AGENCY FOR INTERNATIONAL DEVELOPMENT

ACADEME

Small Ruminant Research Bolsters Developing Country Production Efforts

Improving production of sheep and goats managed by small farmers can result in better diets and living standards for more than 100 million people in the developing world. The AID-supported Collaborative Research Support Program on Small Ruminants (CRSP) is providing scientific and technical know-how necessary for this increased production. The CRSP plays a different role in each country in which it is involved.

On Java, Indonesia, for example, goat and sheep population growth has not expanded during the past 20 years. This trend is taking on new significance since dwindling farm size is leading to small ruminants like sheep and goats replacing cattle and water buffalo as primary livestock on small holdings. The 3 million sheep and 7.5 million goats are raised and marketed for their meat and manure, filling a small but important economic niche. Most are kept either in confinement or semi-confinement systems. With the growing importance of small ruminants to Javanese farmers, there is clearly room for improved production techniques.

When scientists from the CRSP looked into the matter, they found that the reproduction rate among Javanese breeds was low, although the breeds had ample prolificacy potential. (Prolificacy is the product of two traits—the number of lambs born at each lambing and the number of lambings per year.) "There were tremendously long intervals between parturition (lambings) in village flocks because of failure to mate ewes," explains William Weir, deputy program director of the small ruminants CRSP. "We found that the ewes were penned up separately and were either not mated during estrus (heat) or were not exposed to the male for long enough periods." Working with villagers and Indonesian animal scientists, Eric Bradford and Monte Bell of the University of California-Davis learned that the intervals between lambings could be shortened simply by rotating the available breeding rams systematically. The team designed a "ram rotation scheme" to solve the problem. Additional constraints to flock production and problems of postnatal mortality are being studied by other CRSP projects on nutrition, feeding systems, economics, and sociology.

Congress mandated the Collaborative Research Support Program in 1975 as part of Title XII legislation aimed at famine prevention. The amendment directs AID to make greater use of the scientific and technical resources in U.S. agricultural universities to help solve food production problems in developing countries. It authorizes long-term support of research programs by U.S. universities in collaboration with institutions in developing countries and with the international agricultural research centers. Participating universities are required to shoulder 25% of the program costs.

A selenium deficiency—deadly to sheep—was detected by scientists working on a breeding project at Morocco's Tadla Farm. They adapted a corrective treatment practice.

A worldwide assessment in 1977-1978 carried out by the former Joint Research Committee of the Board for International Food and Agricultural Development and AID identified research on small ruminant animals as one of twenty priority areas. The Collaborative Research Support Program on Small Ruminants, initiated in 1978, was the first of eight AID/U.S. University CRSPs to take shape.

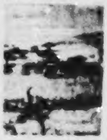
Scientists from 10 U.S. institutions teamed up with counterparts from ministries and universities in Brazil, Peru, Kenya, Morocco, and Indonesia. These nations were selected because of the importance of sheep and goats in their agricultural output, and because federal and regional research institutions are already in place. These overseas collaborating institutions have made in-kind contributions equivalent to a total of $1 million a year to the small ruminants program alone.

"The original planning group emphasized genetic research for sheep and goat production in developing countries," explains Weir. "Increasingly we found that some of the other factors need to be studied, particularly those related to utilization and sources of feed." In Kenya, he says, "CRSP scientists are planting forage crops along fences and on the edges of fields where food for human consumption is grown. We want to test and adapt varieties of crops for ruminants to see if they can be produced without interfering with food planted for human consumption."

In 1980, while selecting goats imported in previous years for a project to improve milk production by crossing U.S. and European goats with native goats, researchers in Kenya noticed symptoms of caprine arthritis-encephalitis (CAE). CAE is a crippling disease that causes lameness and swollen joints. Sometimes called "big knee disease," it is caused by a retrovirus—a virus that lasts throughout the host's life and produces the disease only after long incubation periods. Scott Adams of the University of Washington went to Kenya and worked with officials in Kenya's Ministry of Livestock Development and CRSP scientists checking imported U.S. and European goats and native goats that had been in contact with the imported goats. While only a few active cases were identified, other goats showed clinical signs of CAE. A team of Kenyan veterinarians continued the task and eliminated the diseased animals, thus bringing the disease under control. Continued research was able to demonstrate that CAE had not passed from buck to doe during breeding, nor through semen to kids. The researchers found that CAE is mainly transmitted in the milk from dam to offspring. Preventing CAE's spread throughout Kenyan herds saved the country millions of dollars.

"With the CAE matter settled," says Weir, "the original plan of introducing genes through the use of semen for high milk production is being accomplished." Furthermore, new quarantine standards

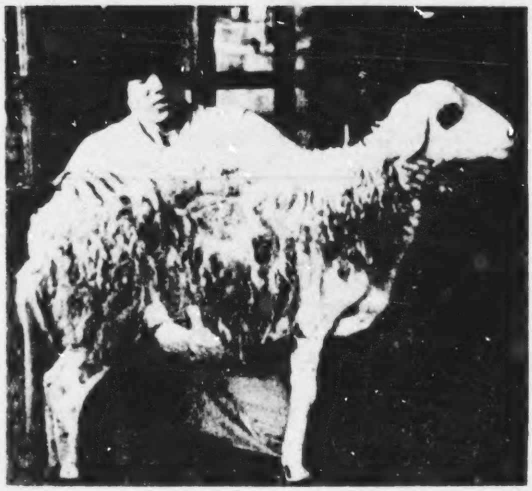
Partners in Research



The Collaborative Research Support Program on Small Ruminants (CRSP) recently marked its fifth anniversary by publishing a major report. *Partners in Research* describes the CRSP and cites accomplishments of its 15 research projects carried out in five host countries (Peru, Morocco, Kenya, Indonesia, and Brazil) and the United States. Scientists from U.S. institutions and host countries have contributed to this research program. The report also lists project publications, research collaborators, trainee programs, and administrative officers. Single copies of the report can be obtained from Charles Haines, AID, Bureau for Science and Technology, Office of Agriculture, Room 420. SA-18, Washington, DC 20523.

Sheep and Goats in Developing Countries

Sheep and Goats in Developing Countries, a study produced for the World Bank by Winrock International, assesses the role of small ruminants in the food production systems of developing countries. The study concentrates primarily on mixed herds of sheep and goats grazing dry rangelands, and small mixed farm systems in areas of medium and high rainfall. Constraints on production are discussed, and a balanced system approach for research, training, and development programs is advocated. Also discussed are support activities like herd health programs, and credit, marketing, and pricing strategies for increased small ruminant production. The study is available for $5.00 from the Publications Sales Unit, Department T. World Bank, 1818 H St. NW, Washington, DC 20433.



Scientists studying production techniques in Indonesia found that reproduction rates among Javanese breeds were low although they had ample prolificacy potential.

now developed in the United States and Kenya will help prevent the spread of this debilitating disease.

In Peru, because many organizations are undertaking research on goats and sheep, the AID mission is using the CRSP as a resource to coordinate activities. In one region, new techniques to upgrade alpaca fiber and genetically select breeding stock offer the potential for increasing exports of higher quality alpaca fiber. Other research on feed use and improved breeding systems shows dramatic increases in meat production from sheep flocks.

"Some research results have been serendipitous," claims Weir. Such is the case in Morocco where the CRSP is helping increase sheep production to meet consumer demand for meat and other small ruminant products. The CRSP is working with the scientists of Hassan II University to develop a more prolific breed of sheep that will increase the number of lambs born per ewe. D'Man breed of sheep has a much higher frequency of multiple births than other Moroccan breeds but they are smaller animals and less well adapted to extensive management conditions than the other local breeds. The two types of sheep are being crossed to produce sheep of higher prolificacy and adaptability to irrigated agricultural areas of Morocco. These important prolific genes may be transferrable to sheep in other parts of the world.

When scientists from the CRSP and the government of Morocco joined a U.S. veterinarian from the University of Minnesota on assignment to work in Morocco's irrigated area, they discovered white muscle disease in the region's lambs. This disease is caused by a deficiency of selenium, a nonmetallic element related to sulphur. The correct balance for selenium is tricky. Too much is toxic to the animal while too little causes white muscle disease. The research team adapted a treatment practice which eliminated the white muscle disease problems.

In Brazil, EMBRAPA (the national research organization for agriculture) established a national sheep and goat research center in the northeastern region in 1978. The CRSP is collaborating with the EMBRAPA staff in developing research programs and facilities for the country. The Brazilian government is providing a major portion of the program's funding.

The Small Ruminant CRSP has sponsored at least 100 students from cooperating countries – including 21 at the doctoral level – and held 12 short-courses for 330 participants in host countries. Twenty-three U.S. graduate students also have participated in research projects in host countries.

"What we're doing," explains Weir, "is providing a vehicle for cooperation in working out constraints to sheep and goat production in five developing countries.

"This cooperation is proving effective," says Weir. "The progress we've made has encouraged AID missions to make greater use of the talents of U.S. university staff. University staff has increased its awareness of the opportunities and challenges in the developing world. For example, we can work on livestock diseases in Africa that cannot be studied in the United States.

"But the most promising aspect of the CRSP," claims Weir, "is the bright young people we're finding in the developing countries and their enthusiastic response to collaborating with U.S. experts and training at U.S. universities." ■

William Fred Johnson, international programs officer with the Board for International Food and Agricultural Development, contributed to this article.

RFF

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Resources

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Feeding a hungry world

MUCH OF THE WORLD'S population is better fed and clothed than at any time in history. But for many millions of persons in the least-developed countries, hunger and malnutrition remain a grim reality of the present and a haunting specter of the future. For the poorest of the poor, security of food and fiber supplies is an immediate daily concern.

The citizens of the United States and many other parts of the developed world are more fortunate. Natural resource endowments mostly are bountiful in these countries and investments in science have yielded technologies to conserve resources or make them more productive when they are limited. Highly developed economic institutions have encouraged specialization and trade among countries. Public investments in education have enhanced the quality of human capital in agriculture as elsewhere in the economy. Public policies and market systems have provided strong incentives for agricultural development. Taken for granted, food security has become almost an entitlement for most Americans.

Assessing the future

The discrepancy between the developing and industrialized worlds is reason enough to try to glimpse the future and to make it better than the past. Nor is there any guarantee that U.S. problems always will be characterized by abundance. But from what vantage point do we peer ahead?

To the extent that people consider the future, they are tempted to give excessive weight to the circumstances of the moment: old lessons soon are forgotten. If relative scarcity is the present condition, people tend to see the future in the same light. When supplies are large and prices of resources relatively low, that too is projected. Agriculture, being inherently unstable, is more subject to such cyclical impressions of its future than are most industries. Witness the past decade, when forecasts ranged from near cataclysmic shortages to abundance.

Realistic perspectives of possible courses of development are essential to rational public and private planning. To assess what will happen if trends continue or change provides a basis for achieving socially desirable goals (or avoiding less-desirable outcomes). Such "indicative" or "contingency" planning is by now commonplace in business and is becoming increasingly so in governments. It is critical to both public and private investment decisions that have lengthy time horizons, and agriculture is a prime example.

This special issue of *Resources*, based on a report to the U.S. Department of Agriculture by RFF's Kenneth R. Farrell, Fred H. Sanderson, and Trang T. Vo, examines the future of U.S. agriculture, with primary reference to the next two decades and a more general assessment to 2020. The authors caution that their projections and assessments are based on past experience and that some trends probably will not persist as new constraints and opportunities emerge. But this is not to say that the future must merely "happen." The inability to forecast uncertainties inherent in the future should not inhibit present actions to shape its outlines.

U.S. food and fiber—Abundance or austerity?

IF FUTURE NEEDS for U.S. food and fiber were limited to the domestic market, few would be concerned about physically meeting those needs well into the next century. With the U.S. population growth rate expected to decline to perhaps 0.5 percent annually by 2000 and the likelihood of only small increases in per capita demand from higher real incomes, total domestic demand for food and fiber will be increasing less than 1 percent per year by 2000 and perhaps even more slowly thereafter. In such a closed economy, the major issues would be growth in productive capacity, dealing with low agricultural incomes, and the resource and human adjustment problems raised by slow growth.

But a closed economy is a fiction. The agricultural products of 2 in every 5 acres of harvested U.S. cropland are exported. International interdependence in agricultural markets is pervasive and reinforced by the increasing mobility of knowledge, technology, human and capital resources, and a wide range of goods and services. As the world's largest producer of food and fiber, a major recipient of those products in world trade, and a wellspring of agricultural technology, the United States is inextricably involved in a widening web of global interdependence.

By the year 2000, world population is projected to increase by 1.7 billion persons to 6.1 billion—a jump of nearly 40 percent relative to 1980—with more than 90 percent of that growth in the least-developed regions of the world. The projected average annual increase of 87 million persons is the equivalent of adding a Bangladesh each year for the next twenty. The importance of such an increase to world food supplies is difficult to overstate. The world produced 1.57 billion metric tons of cereal grains in 1980, 270 million metric tons of it in the United States. To provide the same amount of grain per person to the 1.7 billion additional consumers in 2000 would require an additional 650 million metric tons—more than twice the U.S. average production of 1979–81. If per capita economic growth of recent decades in the developing countries is extended into the twenty-first century, global demand for food could be much higher, perhaps doubling current levels by 2020.

Much of the future growth in world production must come from the countries where population growth occurs. Even so, expanded world trade will be needed in such products as feedgrains and oilseed, which the United States produces in abundance and with comparative economic advantage relative to many countries. Total demand for U.S. food and fiber could expand substantially, with important consequences for domestic consumers as well as for producers and related institutions.

Beyond the physical and economic capacity of the United States to meet prospective demand, long-term issues and uncertainties will affect the supply and quality of natural resources, including the natural environment, on which agricultural and other biological systems ultimately depend. Even at current levels of agricultural production, there is disquieting evidence of soil erosion, water pollution, and declining water tables, and of chemical hazards in the environment and in the food chain in the United States and other countries. And in the long run looms the possibility of global climate changes, with unknown but likely uneven effects on agriculture and the natural environment.

Food and fiber projections to 2000 and beyond

Surveying the globe

World output of goods and services tripled in real terms between 1955 and 1980. Population rose from 2.8 to 4.4 billion, but per capita income doubled.

Agricultural production and trade grew with economic development. Worldwide, agricultural output rose at 3.1 percent per year in the 1950s, 2.6 percent in the 1960s, and 2.2 percent in the 1970s. The growth was broadly shared among developed and developing countries, with the latter enjoying higher rates of growth than the former. By 1980, world agricultural production, excluding China's, had nearly doubled the levels of the early 1950s. World agricultural trade grew at 3 percent per year in the 1960s and 4.3 percent in the 1970s. Undergirding that growth were forces of sustained economic development that expanded and altered the composition of demand, stimulated international trade, and induced structural changes in agriculture. Massive foreign investments improved the infrastructure of agricultural production systems and the development of natural resources, particularly water resources for irrigation. Human capital was enhanced through education. Real expenditures for agricultural research more than doubled, yielding myriad productivity-enhancing technologies.

Not all countries and people shared equally in the benefits of these impressive gains. The 2.1 percent annual population growth in the low-income developing countries from 1955 to 1980 left little room for improvement of per capita incomes and food supplies for millions of people. In Africa, particularly Sub-Saharan Africa, even the 2.7 percent growth in total food output in the 1960s provided only slight increases in per capita output; in the 1970s, per capita production fell precipitously by an average of more than 1

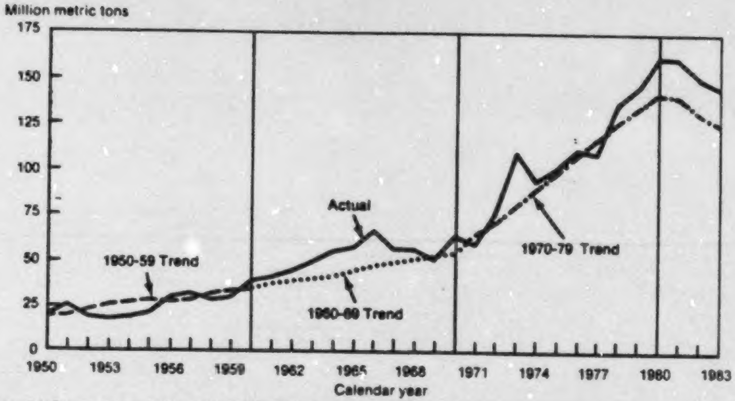

Figure 1. U.S. export volume, 1950–83. Source of data: U.S. Department of Agriculture, Economic Research Service.

percent per year from already low levels. In South Asia, where population increased by 527 million between 1960 and 1980, the food-to-population balance improved slightly from its razor-thin position at the beginning of the 1960s. Even in those developing countries able to augment per capita supplies by imports, millions remained undernourished.

Global economic conditions once again have changed dramatically. Economic growth in the industrial countries slowed to 1 percent in 1981 and in 1982 was a negative 0.2 percent. In the high-income, oil-exporting nations and in Latin America and the Caribbean, growth declined even more sharply. World agricultural output has been maintained at relatively high levels in the 1980s, but international grain trade has declined since 1981.

The United States

The U.S. economy began strengthening in 1983, but for the industrial countries as a whole, growth is and will be modest in the immediate future, with relatively high levels of unemployment. Near-term recovery prospects are tenuous in many of the developing countries because of the combined effects of declining export earnings, severe problems in servicing external debts incurred under inflationary expectations of the 1970s, and stringent deflationary policies that have reduced imports and slowed economic growth.

The three decades of global economic development provided major impetus to the growth of U.S. agriculture. Output expanded by nearly 70 percent and the United States became a dominant supplier of coarse grains (mostly corn and sorghum), cereals, and oilseed in world trade and an increasingly important balance wheel of the world food system.

In the fifteen-year period from 1950 to 1965, the nominal value of U.S. agricultural exports grew at about 4 percent per year (figure 1). Throughout much of the 1950s, the value of U.S. agricultural imports exceeded that of exports. But by the middle of the 1960s, foreign economic growth was stimulating a sustained growth of U.S. exports and the balance of agricultural trade became positive, in the range of $1.5 to $1.9 billion annually. Then a probably unique combination of events generated dramatic increases in U.S. exports—a global shortfall in agricultural production, large-scale entry of the USSR in world agricultural markets, rapid economic growth in many countries, declining value of the dollar in international exchange, and expectations of commodity shortages and inflation. In 1973 alone, the value of exports surged some 88 percent. In the middle 1970s, with U.S. farmers planting "fencerow to fencerow," exports ranged between $22 and $23 billion per year, with an annual trade surplus of $10 to $12 billion. In the late 1970s, the value of exports jumped once again to a new plateau, capped in 1981 by $43.3 billion and a surplus balance of trade totaling nearly $27 billion. Between 1970 and 1980, the nominal value of exports grew at an astonishing 19 percent compound annual rate. In real terms, the total increase was close to 100 percent.

All major groups of commodities shared in the expansion of exports. By the late 1970s and early 1980s, exports of U.S. wheat equaled nearly two-thirds of expanded annual production. At the same time, more than one-quarter of coarse grain production, 60 to 70 percent of rice production, and 50 to 60 percent of soybean and cotton production were being exported. The U.S. share of world trade had grown to 40 percent for wheat, 55 to 60 percent for coarse grains, 60 to 66 percent for soybeans, 30 to 40 percent for cotton, and about 20 percent for rice.

Geographically, U.S. exports to all regions increased. Exports to Asia, dominated by Japan, grew at an annual compound rate of 19 percent between 1970 and 1980 and by the end of the decade accounted for more than one-third of all U.S. agricultural exports by value. Even with the import protection policies of the European Economic Community (EEC), exports to Western Europe grew at 17 percent per year and absorbed about 30 percent of total exports by the end of the decade. The largest increases were to Eastern Europe and the USSR, reflecting both slow growth in agricultural output in that region and central government decisions to improve the food supply; to North Africa and the Middle East; to Latin America, mainly Mexico; and to other middle-income developing countries where rates of economic growth were high. And in the late 1970s the People's Republic of China also emerged as a major U.S. market ($2.2 billion in 1980), primarily for cotton and grains. Although both the value and volume of aggregate U.S. exports have come off their 1981 peaks, they remain at levels far above those of preceding decades (see figure 1).

Less well recognized is the fact that the United States now is the second largest *importer* of agricultural commodities, mainly from the developing countries of Latin America, Asia, and Africa. The nominal value of these imports, two-thirds of which compete directly with domestically produced products, quadrupled to $17 billion between 1950 and 1980—a 28 percent increase in real terms.

Although the domestic market still is the primary outlet for U.S. agricultural products, the sector clearly has become increasingly trade oriented. The growth in U.S. trade has been highly and positively correlated with world economic development. For the remainder of the century and beyond, the pace and pattern of global population, economic, and agricultural development will be crucial to U.S. agriculture.

World population

Changes in regional and world population constitute the fundamental and most important force likely to increase the demand for U.S. commodities. Rapid population growth means larger potential markets for exports, but it also may diminish growth in living standards and dampen demand.

With only one exception, every region in the world where 1970s population growth rates exceeded 1 percent is experiencing declining rates today and expects much slower growth by the end of the century (table 1). The exception is Sub-Saharan Africa, where growth rates are expected to increase through the 1980s before beginning to slow in the late 1990s.

Declining growth rates notwithstanding, the global prospect is for swelling economic pressure from population. As noted at the outset, the increase expected over the last two decades of the century is enormous—an average of 87 million persons per year. Furthermore, the distribution of the growing population is critical. Some 93 percent of the growth during the coming two decades will be in the world's six least developed regions, with more than 25 percent in South Asia alone and 20 percent in Sub-Saharan Africa. By 2000, only 19 percent of the world's people will live in the six most developed regions, down from 23 percent in 1980.

Economic growth

Important as are the implications of population growth and its distribution, most of the developing countries have the potential for rapid, sustained economic growth. Many did grow rapidly during the 1970s, a pattern interrupted by the worldwide recession, which has had an inordinate impact on developing countries.

We have assumed that during the next two decades real economic growth will average well below the rates of the 1970s. The recession of the early 1980s and the impact of policies implemented by both developed and developing countries to constrain inflation will result in comparatively slow economic growth through the rest of the 1980s and into the 1990s (table 2). We assume growth rates will pick up during the 1990s and, by the end of the century, possibly exceed the average rate of the 1970s. We project annual petroleum price increases averaging between 1 and 2 percent. In general, we see the most difficult problem facing the developing nations as balancing their needs for economic growth and for more jobs for a rapidly growing labor force against the need to reduce large debts and high inflation rates.

In each region, economic growth and population growth are closely intertwined. We project that, for example, by 1990, Sub-Saharan Africa and the EEC will have similar rates of real economic growth, with the rate in Sub-Saharan Africa slightly higher (table 3). However, the population growth rate there is so high and the EEC rate so low that the per-capita-income growth rates differ greatly. The EEC economy will grow a moderate 2.2 percent per capita per year, while we see economic growth in Sub-Saharan Africa declining by 0.5 percent annually through 1990.

Table 2. Historic and Projected Average Annual Rates of Real GNP Growth (%)

Region	1970–80	1980–2000
North Africa–Middle East	5.6	3.9
Sub-Saharan Africa	3.1	2.6–3.2
European Economic Community	2.9	2.5
Other Western Europe	3.3	3.0
USSR	4.8	3.3
Eastern Europe	4.6	3.1
South Asia	3.3	3.6
East Asia	7.5	5.6
Asia, centrally planned economies	6.0	4.2
Oceania	4.2	3.6
Latin America	5.9	4.1
North America	3.6	3.4
Total world	4.3	3.5

Source: Historic data from The World Bank, U.S. Department of Agriculture, and other sources.

General policy assumptions

Among the several factors that determine the global demand for U.S. commodities, economic policies are both extremely important and uniquely difficult to project.

Table 1. Historic and Projected Population, Absolute Change, and Growth Rate

	1980	1980–90		1990–95		1995–2000		2000
Region	Population (millions)	Absolute change (millions)	Rate of growth (%)	Absolute change (millions)	Rate of growth (%)	Absolute change (millions)	Rate of growth (%)	Population (millions)
North Africa–Middle East	243	70	2.56	35	2.12	40	2.22	388
Sub-Saharan Africa	387	141	3.16	95	3.37	105	3.15	727
European Community	270	7	0.26	5	0.34	4	0.30	286
Other Western Europe	79	5	0.62	2	0.54	2	0.46	88
USSR	265	26	0.94	11	0.73	10	0.63	312
Eastern Europe	135	9	0.65	4	0.56	4	0.54	152
South Asia	874	216	2.24	112	1.97	112	1.80	1,315
East Asia	459	87	1.75	45	1.59	45	1.47	635
Asia, centrally planned economies	1,075	161	1.41	82	1.30	80	1.18	1,398
Oceania	23	3	1.23	1	1.10	1	0.99	28
Latin America	359	90	2.26	48	2.03	47	1.83	544
North America	252	20	0.73	8	0.80	7	0.50	287
Total world	4,421	835	1.75	448	1.65	457	1.55	6,160

Source: World Bank.

Table 3. Historic and Projected Total and Per Capita Economic Growth Rates

	Economic growth rates (%)							
	1985		1990		1995		2000	
Region	Total	Per capita	Total	Per capita	Total	Per capita	Total	Per capita
North Africa–Middle East	4.17	1.5	3.89	1.5	3.62	1.5	3.72	1.5
Sub-Saharan Africa	2.67	−0.5	2.72	−0.5	3.37	0	3.15	0
European Economic Communities	2.41	2.2	2.80	2.2	2.84	2.2	2.80	2.2
Other Western Europe	3.67	2.5	3.07	2.5	3.04	2.5	2.96	2.5
USSR	3.49	2.5	3.39	2.5	3.23	2.5	3.13	2.5
Eastern Europe	3.21	2.5	3.11	2.5	3.16	2.5	3.04	2.5
South Asia	3.63	1.5	3.64	1.5	3.47	1.5	3.30	1.5
East Asia	5.61	4.0	5.70	4.0	4.89	3.0	4.47	3.0
Asia, centrally planned economies	4.58	2.8	4.80	2.8	4.30	2.8	4.08	2.8
Oceania	3.71	2.5	3.66	2.5	3.60	2.5	3.49	2.5
Latin America	4.84	2.3	4.60	2.3	4.33	2.3	4.13	2.3
North America	3.50	2.7	3.43	2.7	3.30	2.7	3.20	2.7

Source: World Bank.

The impact of macroeconomic policies on food consumption is direct: only with economic growth can growth be supported in consumption and improved nutrition. When economic growth slows, the growth in food and fiber consumption and trade also slows, and investment in production agriculture is curbed. The result is slower production growth, which often lags renewed growth in consumption and trade and results in volatile prices.

The demand for food was stimulated during the 1970s by a number of factors.

- Demand from the oil-exporting countries was fueled by rising incomes.
- The Soviet Union, hard-pressed to meet its meat consumption targets, also profited from higher oil and raw material prices.
- The advanced developing countries experienced rapid income and export growth at a stage in their development when much of increased income is spent on upgrading diets. Their purchasing power was reinforced by their ability to borrow recycled petro-dollars.
- Eastern Europe also borrowed heavily to finance its imports, including grain and soybeans.

These favorable developments more than offset the depressing effects of the oil shocks on income growth—and hence the demand for agricultural products—in the developed world. Another positive factor for U.S. exports was the decline in the exchange rate of the dollar.

The economic retrenchment of the early 1980s ended the export boom. Production responded slowly, supplies soon became excessive, and export prices fell sharply. Exporters were hurt, especially those who depended on agricultural exports for a major share of their foreign exchange earnings. Importers received a temporary windfall. But the strong dollar made more difficult debt servicing and paying for imports in dollars.

More rapid real economic growth would make the developing country debt problem easier to resolve, but obtaining an acceptable balance between debt-service ability and investment needs will be an enduring concern. Countries that rely on tropical product exports for most of their foreign exchange earnings will find it especially difficult because growth in trade for these products will be substantially slower than for other agricultural products.

> *Each is prone to see agriculture according to his lot, only a few see it as a whole, and fewer see it as an integral part of an interdependent economy.*
>
> —Theodore W. Schultz, *Agriculture in an Unstable Economy*

Food and agricultural policies

Governments actively intervene in agriculture in most countries. The centrally planned economies and many developing countries long have attempted to maintain stable and low food prices, while few have had policies of relatively high producer prices. Most industrial countries have had complex structures of producer price incentives, and some—notably the EEC—also have held consumer prices relatively high. Both types of structures have proved increasingly costly and cumbersome and are in the process of change.

The consequences have depended on the policy structure. Where food prices and producer prices have been held low, consumption tends to outpace production, requiring costly commodity imports. Where food prices are kept low and producer prices relatively high, consumption and production increase, but the subsidy becomes an ever-heavier budget burden. Where producer incentives are held very high, and especially where consumer prices are high as well, production has far outpaced consumption and surplus disposal has become extremely expensive.

The implications of these developments in food and agricultural policies are twofold. First, they demonstrate the power of economic incentives for both production and consumption. The sharp increases in national production correlate nearly perfectly with patterns of incentives, and the implication for both centrally planned and developing countries—where production lags behind policy objectives—is clear. Second, these trends portend a rationalization of the price and incentive policies worldwide. In spite of the fact that production incentives invariably develop a political momentum that is difficult to counter, the very large costs of incentive structures unrelated to domestic or world markets are difficult to justify and likely to become intolerable over the longer run. The implications of this rationalization are not now well understood, either for the countries themselves or the global food system, and need more scrutiny.

While the agricultural production and food consumption and trade of individual countries are, of course, markedly influenced by the sectoral and macroeconomic policies these countries individually pursue, their cumulative effects also influence the global foodstuffs balance and the prevailing patterns of world trade. Moreover, some countries and regions are individually so important to the global food system that a major shift in their policies could alter the entire system.

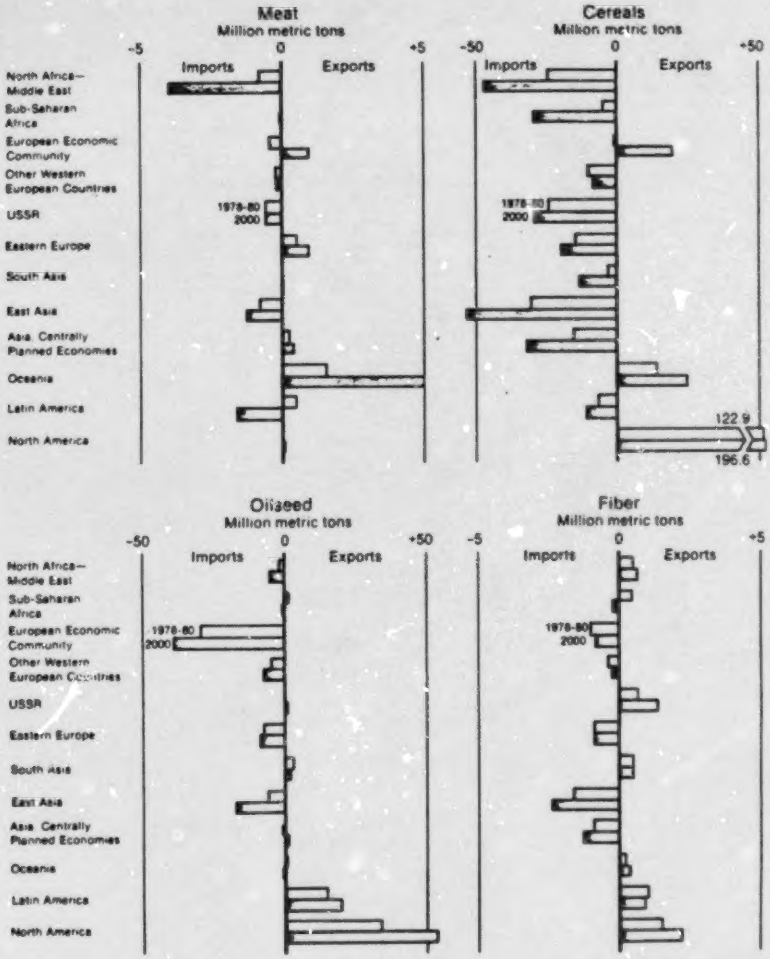

Figure 2. Projected world trade for meat, cereals, oilseed, and fiber. Plus signs (+) indicate exports and minus signs (−) indicate imports.

Table 4. Historic and Projected World Per Capita Consumption (In kilograms per capita)

Commodity	1969–71	1978–80	Annual change (%)	2000	Annual change (%)
Meat	28.3	31.8	1.3	36.8	0.7
Milk	109.0	107.1	−0.1	102.7	−0.2
Cereal grains	334.7	361.1	0.8	371.7	0.1
Oilseed	29.7	35.5	2.0	40.5	0.6
Fiber	6.3	6.0	−0.6	4.9	−0.1

Source: Historic data from the UN Food and Agriculture Organization.

Projected global demand

The effects of economic changes on food and fiber consumption are extremely complex. Generally, food consumption increases with income to a point where consumer needs become satiated. As incomes increase, consumers first attempt to meet their caloric needs, then to increase the variety and quality of their diets, usually by substituting animal protein for carbohydrates—more meat, eggs, and dairy products and fewer grain-based foods. Table 4 shows the general dimensions of the change in world diets we expect to result from projected patterns of economic growth and food availability. For the last two decades of the century, we project average annual increases in per capita meat consumption smaller than during the 1970s, along with a continued—although slower—decline in per capita milk consumption. The combination of substituting animal products for food grains and increasing feed use of cereals almost is offsetting, and results in per capita cereal consumption only slightly above the level of 1978–80. Oilseed consumption likely will continue to increase, but not as rapidly as during the 1970s. The increases in aggregate demand are, nevertheless, very large once population growth is taken into account. We project world demand for meat to increase by 89 million tons, or 64 percent; for milk, by 168 million tons, or 36 percent; for grains, by 722 million tons, or 46 percent; for oilseed, by 95 million tons, or 62 percent (figure 2). The largest percentage increases tend to be in the developing world. The larger demand for livestock products will contribute significantly to the growth of aggregate demand for cereals and oilseed, over and above the increased demand for grains and oils for direct human consumption tied to the population increase. We project global consumption of natural fibers to grow 37 percent by 2000, or about 1.5 percent annually. Consumption of cotton, as a result of somewhat less intense competition from synthetic fibers, is projected to increase 1.85 percent annually to 2000.

Global production

Detailed examination of land and water resources and of the possibilities of raising yields by increased applications of inputs and technology suggests that all regions will meet increased demand largely out of domestic production. While the rates of growth of demand are particularly high in some of the developing regions, these generally also are the regions where production technology has been lagging and the potential for productivity growth is, therefore, relatively large. Realizing this potential will require massive investments in land improvement, irrigation, research, and extension; adequate inputs of fertilizer, pesticides, and improved seeds; improved marketing and storage facilities; and adequate economic incentives.

The projections presented here represent our judgment of what is likely to happen under present or modified policies. They take into account considerations of comparative advantage and consumer welfare that favor increased trade, but also foreign exchange constraints and self-sufficiency and farm income objectives that may work in the opposite direction.

Cereals. Accounting for about three-fourths of the world's crop area and production, cereals clearly are the most important commodity group. The 1.8 percent projected annual rate of increase in production is significantly less than the 2.6 percent annual growth experienced in the 1970s (table 5). Most of the increase in production will come from improved technology rather than additional land, as has been the case for the last several decades. Indeed, we expect area expansion to contribute only 15 percent of the production growth, compared to 25 percent in the 1970s. In absolute magnitude, harvested grain area, which increased by 46 million hectares in the 1970s, is projected to increase by another 40 million hectares in 1980–2000. [One hectare (ha) equals 2.47 acres.]

Oilseed. The 1970s brought a sharp increase in oilseed production as nations attempted to improve food quality and the efficiency of animal production. In 1969–71, nearly 113 million ha were used to produce oilseed—about 17 percent of the area devoted to cereals. By the end of the decade, the share increased to 21 percent. Nine-tenths of the increase was in soybeans, mainly in North and Latin America.

The annual rate of growth of world oilseed production projected for 1980–2000 (2.1 percent) is only half that experienced in the 1970s (table 6). For North America, the projections call for 1.8 percent annual growth, only one-third of that in the 1970s; for Latin America, 1.9 percent, down from 11.3 percent in the 1970s.

As with cereals, most of the increase will come from increased yields. This contrasts sharply with the 1970s, when area expansion contributed more than half of the increase in production.

World trade projections

World trade in commodities depends not only on consumption needs not satisfied by domestic production, but also on economic and trade policies, and on the financial and foreign exchange position of each nation.

In the short run, trade policies frequently are determined less by comparative advantage in production than by balance of payment constraints, self-sufficiency considerations, or farm income objectives. Many nations tightly control prices of agricultural products, holding them at target levels by import quotas, variable fees and levies, or directly administered prices.

Although such policies are vitally important to world trade and changes are difficult to anticipate, the prospect by and large is for policy structures similar to those currently in place, except for slight modifications in some regions where forces for change are building. These are primarily the EEC, USSR, China, and Sub-Saharan Africa. We project that the world will depend more on trade by 2000, and assume implicitly that current protectionist pressures will abate as economic growth resumes.

National financial conditions are major considerations in world trade projections. Two diverse impacts arise from the heavy debt burdens and weak financial situations that now exist in many developing nations, primarily in Latin America, but also in Africa and Asia, and in Eastern Europe. The first is that the stronger dollar has made both oil and U.S. commodities more expensive to purchase and thereby tends to reduce many importers' ability to import these products while enhancing U.S. competitors' positions. The second is the pressure such conditions place on developing nations to increase exports.

Table 5. Rates of Growth of Annual Cereal Grain Production

Region	Area		Yield (%)		Production	
	1969–71 to 1979–81	1979–81 to 2000	1969–71 to 1979–81	1979–81 to 2000	1969–71 to 1979–81	1979–81 to 2000
North Africa–Middle East	0.06	0.18	2.04	2.17	2.10	2.35
Sub-Saharan Africa	1.17	0.70	0.83	1.00	2.10	1.70
European Economic Community	−0.09	−0.14	2.38	1.28	2.30	1.12
Other Western Europe	−0.17	−0.10	1.76	2.58	1.60	2.46
USSR	0.83	0.06	−0.30	2.38	0.50	2.31
Eastern Europe	−0.43	0.08	2.75	1.09	2.31	1.15
South Asia	0.42	0.14	1.94	1.97	2.37	2.11
East Asia	1.12	1.28	1.47	1.21	2.60	2.51
Asia, centrally planned economies	0.21	−0.22	3.44	1.85	3.65	1.63
Oceania	3.20	2.10	0.78	1.18	4.00	3.29
Latin America	0.73	0.46	2.18	1.08	2.92	2.48
North America	1.73	0.24	1.71	1.11	3.50	1.36
Total world	0.65	0.27	1.94	1.38	2.60	1.83

Source: Historic data from the UN Food and Agriculture Organization.

Table 6. Rates of Growth of Oilseed Production Growth

Region	Area		Yield (%)		Production	
	1969–71 to 1979–81	1979–81 to 2000	1969–71 to 1979–81	1979–81 to 2000	1969–71 to 1979–81	1979–81 to 2000
North Africa–Middle East	−0.50	1.23	1.84	0.18	1.23	1.41
Sub-Saharan Africa	−0.99	−0.47	−0.05	0.70	−1.04	0.22
European Economic Community	4.04	2.36	2.74	0.91	6.89	3.29
Other Western Europe	9.06	1.89	−1.91	2.58	6.99	4.30
USSR	−0.25	0.30	0.74	2.06	0.49	2.97
Eastern Europe	2.37	2.88	1.14	1.26	3.53	3.85
South Asia	0.83	0.43	0.39	1.19	1.02	1.63
East Asia	1.07	0.89	1.48	2.47	2.54	3.18
Asia, centrally planned economies	1.23	1.04	1.30	1.38	2.54	3.04
Oceania	7.53	1.08	2.31	1.37	10.04	2.47
Latin America	6.95	1.00	4.05	0.90	11.26	1.91
North America	4.18	0.89	1.33	1.08	5.57	1.79
Total world	2.21	0.80	2.02	1.33	4.27	2.13

Source: Historic data from the UN Food and Agriculture Organization.

even when world markets are depressed and it is uneconomical for them to do so, thus further increasing competition with U.S. exports.

We expect the current difficult financial conditions for the Third World to continue through the mid-1980s at least (and longer for the most debt-ridden countries), but to improve steadily through the 1990s. The increases in per capita food consumption projected for the end of the century—modest as they are—depend heavily on world trade. Cereal consumption is expected to exceed production in ten of the twelve regions by 2000, and meat consumption in five of twelve.

Projected trade volumes in major commodities derived from the preceding consumption and production projections are presented in figure 3.

- For *meat*, the aggregate volume of regional net imports is projected to triple, from 2.6 million metric tons in 1978–80 to 7.4 million in 2000.
- Trade in *dairy products*, as measured by aggregate regional net imports, is projected to increase by 60 percent, from 15.7 million metric tons (milk equivalent) in 1978–80 to 26 million in 2000.
- Trade in *cereals* is projected to almost double, with aggregate regional net imports rising from 131 million metric tons in 1978–80 to 242 million by the end of the century. This, however, represents a much slower rate of growth than that experienced in the 1970s.
- For *oilseed*, the aggregate volume of net regional imports is projected to increase by 52 percent, from 51 million metric tons in 1978–80 to 78 million in 2000. This, again, represents a much slower rate of growth than prevailed in the 1970s.
- World trade in *natural fibers*, as measured by regional net imports, is projected to grow by 25 percent, from 4.8 million metric tons in 1978–80 to 6.0 million in 2000, also a slower rate of growth than in the 1970s.

Some major uncertainties

All projections, including ours, are at the mercy of uncertainties at every step in the analysis, with changes in public policies undoubtedly the most important sources of uncertainty. For example, an EEC policy in which food production, consumption, and trade were geared to world prices could swing the region from being a net exporter of cereal grains to being, as we project, a net importer of those products by 2000. The difference could be as much as 20 to 30 million metric tons. Similarly, a reorganization of Soviet agriculture could have major effects on the global food system. And other uncertainties should be noted, as follows.

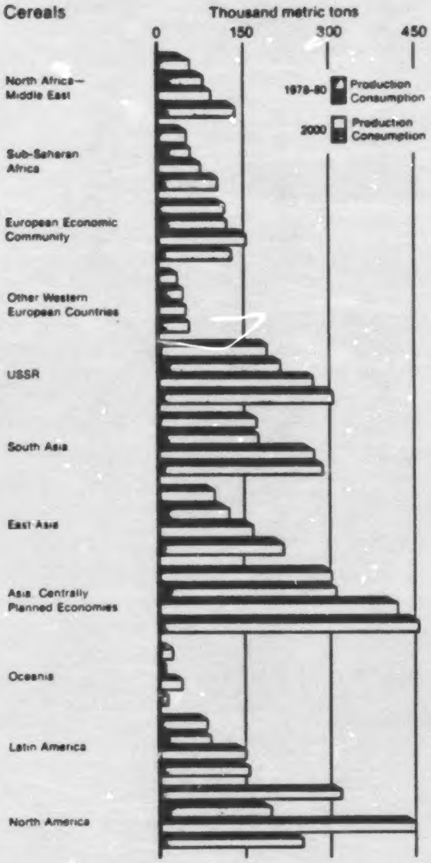

Figure 3A. Production and consumption of cereals in specific regions for 1978–80, and projected for 2000. Source of historic data: UN Food and Agriculture Organization.

Population growth. For many years following World War II, future population growth tended to be underestimated, mainly because forecasters did not fully foresee the effects of progress in medicine and sanitation in reducing mortality in the developing world. More recently, the tendency has been to overestimate growth because of a lag in recognizing the decline in fertility rates in the wake of urbanization and industrialization; more widespread education and family planning programs; and the gradual enhancement of the social status of women. Even small downward revisions of population growth rates can have significant effects on food projections.[1]

Income growth. Assumptions about future economic growth are critical. Accordingly, we estimated changes in the demand for meat, milk, cereals, and oilseed, and in the corresponding trade levels to 2000 resulting from "high" and "low" growth rates. Even though the alternative growth rates differ, in general, by only one-half of a percentage point from those used in the baseline projections, the resulting world demand estimates for meat for the year 2000 vary from minus 7.6 percent to plus 8.6 percent around the baseline estimates. For the other, less income sensitive commodities, the differences are smaller. The effects on trade are even more significant: the high-income growth variant raises the aggregate regional net meat imports by 42 percent; the low variant reduces it by 29 percent.

Income elasticities. As in the case of population, analysts often have to work with outdated income-consumption relationships and thus are slow to incorporate changes that already have taken place, let alone changes that might occur in the future. Moreover, past income growth may have delayed future effects because it may take years—even a generation—for national diets to adjust to higher levels of affluence.

Income elasticities also are affected by changes in income distribution, which are not considered here. Poor people spend a higher proportion of any additional income on staple foods than their more affluent compatriots. Consequently, the average income elasticity of demand for foodgrains would be significantly higher in South Asia, say, should the income distribution become more equal.

Competitive factors affecting trade patterns. Trade patterns are highly sensitive to changes in competitive conditions. The United States has a substantial comparative advantage in grain and soybean production, but other countries, including Canada, Australia, Argentina, and Brazil, have become major competitors. The United States is not now a significant exporter of livestock products and is not likely to become one, but competitive conditions could become more favorable. A great deal of uncertainty exists about the extent to which importing countries will satisfy the increased demand for livestock products by importing meat and dairy products or by developing their own live-

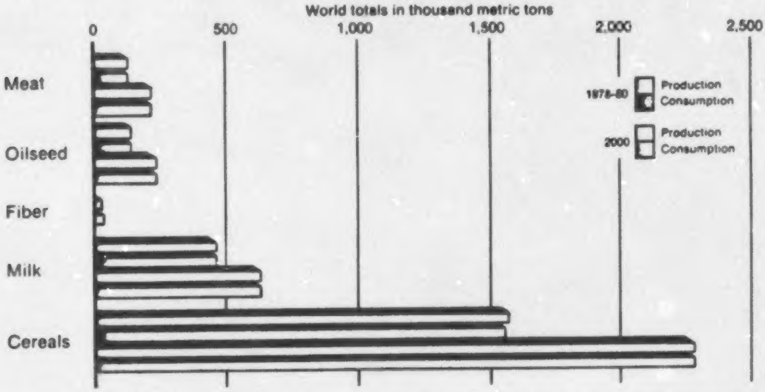

Figure 3B. Total world production and consumption of meat, oilseed, fiber, milk, and cereals for 1978–80 and projected for 2000. Source of historic data: UN Food and Agriculture Organization.

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[1] Population projections are still controversial. The latest medium variant projections by the United Nations (1980) show a somewhat more rapid decline in world population growth rates than the World Bank projections used here, from 1.72 percent in 1980 to 1.5 percent in 2000, mainly because of a sharp downward revision for China. Although the UN growth rate is only 0.05 percentage points lower, it yields a world population that is 65 million (or 1 percent) smaller than the World Bank projection for 2000.

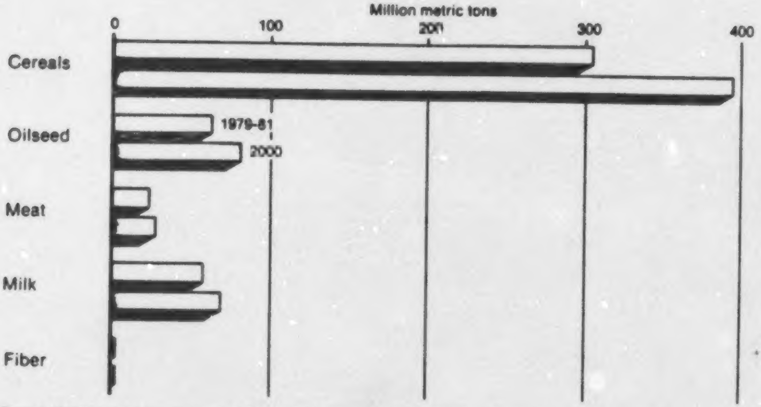

Figure 4. Historic and projected demand for U.S. agricultural commodities during 1979–81 and projected for 2000

stock industries, based on imported feedstuffs.

Beyond 2000

World population probably will continue to increase through the first two decades of the twenty-first century to perhaps 7.8 billion, despite the projected decline in the growth rate—1.23 percent annually from 2000 to 2020 compared with 1.67 percent from 1980 to 2000. The significance of a nearly 3.5 billion increase in the next forty years is difficult to assess from 1984's vantage point, but it clearly implies mounting pressure on resources and technologies to meet human needs for food and fiber.

The projections in figure 4 are highly aggregated, but they do indicate the general order of magnitude that might prevail for principal variables by 2020.

Production of cereals required to meet projected 2020 consumption levels would be 90 percent above the 1979–81 world average production; that of oilseed and meat more than double (123 and 140 percent, respectively); and that of cotton is nearly two-thirds above the 1979–81 average. Although an increase in the cultivated land base (106 million ha) would be necessary from the current stock of unused arable land—estimated to range between 1.5 and 2.0 billion ha—most of the increased production probably would be derived from increased crop yields, because it is more economic. The projections suggest increases of 70 to 75 percent in global yields of cereals and oilseed would be needed by 2020 relative to 1979–81. Such an increase would equal an average annual yield increase of 1.3 to 1.4 percent over the forty years. Increases of this magnitude on a sustained basis would be possible only with major new technological advances, expanded irrigation, double cropping, and other types of intensified production. An even greater reliance on world trade would be needed.

Projected demand for U.S. food and fiber

Since the late 1960s, the U.S. policy for grain, oilseed, and cotton has been geared to the world market: as domestic demand leveled off, production responded primarily to trends and fluctuations in export demand (table 7). The sharp rise in export volume in the 1970s was attained by increasing acreage and yields, without lasting effects on real prices. By comparison, growth in both domestic and export demand for U.S. products is likely to be more moderate in the next two decades, particularly in the 1980s.

Table 7. Historic and Projected Global Demand For U.S. Agricultural Products
(In millions of metric tons)

	1969–71			1979–81			2000		Total		
Commodity	Domestic	Net trade	Total	Domestic	Net trade	Total	Domestic	Net trade	Baseline	High	Low
Cereals[a]	171.0	39.0	210.0	182.7	109.6	292.3	227.0	158.2	385.3	405.3	378.6
Oilseeds[b]	80.2	17.0	97.2	61.5	33.3	94.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Meat	20.9	.4	21.3	24.5	0	24.5	29.2	0.1	29.3	29.6	29.4
Milk	53.4	−.2	53.2	59.0	−0.8	58.2	71.1	−0.9	70.2	70.8	70.2
Cotton	1.71	0.51	2.22	1.47	1.54	3.01	1.42	2.20	3.62	3.70	3.6

[a] Includes feed, food, seed, industrial use and waste.
[b] Includes oilseed trade, in oilseed equivalent.

Projected total demand for cereals is 31 percent greater in 2000 than the 1979–81 average, that for oilseeds about 42 percent greater, and for meat, milk, and cotton about 20 percent greater than in 1979–81. The implied annual growth rates, in the range of 0.9 to 1.6 percent, all are well below those of the 1970s. Under alternative economic growth rates, cereal demand might range between 379 and 405 million metric tons (a 24 to 35 percent increase relative to 1979–81), and demand for oilseed might range between 41 and 44 percent above 1979–81.

If realized, these projections will reinforce the trend of increased dependence on foreign markets. By 2000, close to 60 percent of the total consumption of U.S. cotton and soybeans and 40 percent of consumption of U.S. cereals will be in foreign markets, while projected per capita domestic consumption by 2000 will be only 3 to 6 percent above 1979–81 levels.

The long-term productive capacity of U.S. agriculture

What will it take to meet projected domestic and foreign demand in 2000 at real prices approximating those of recent years? Fortunately, no miracles are required: the implied production growth rates to 2000 are well below those of the 1970s (table 8), which suggests less pressure on the nation's agricultural base than foreseen by some analysts in the 1970s. However, it should be noted that these growth rates are from the relatively high production levels and resource-use base of 1977–81, when land used for crops attained a record high 390 million acres, with average crop yields slightly above trend.

Table 8. Historic and Projected Annual Rates of Growth of Total Production, United States

	Growth rate (%)	
Commodity	1969/71–1979/81	1979/81–2000
Cereals	3.7	1.3
Oilseed	5.7	1.6
Meat	1.4	0.9
Milk	0.9	0.9
Cotton	3.1	0.9

Agriculture's ability to meet projected demand depends on many uncertain variables, both technical and economic. The quantity and quality of resources combined with production technologies available through time define physically attainable productive capacities. These boundaries have expanded substantially in recent decades and may be expected to continue to do so as a result of technological advance. But the combination of resources and production methods that will be used to achieve any physically attainable output depends on economic relationships—the price relationships among production inputs, between those inputs and product prices, and among product prices themselves. Obviously, projecting such economic relationships several decades ahead is fraught with great uncertainty. Nevertheless, without attempting to project precise quantitative dimensions of future productive capacity and output, we do assess potential technological, economic, and natural resource developments that may affect the [illegible] rate of expansion of physical an[illegible]omic capacity.

The future supply of natural resources and other production inputs. The adequacy of the natural resource base to sustain continuing expansion of agricultural production came under intense scrutiny during the 1970s. And well it might: take the case of the most basic natural resource—the land itself. High rates of growth in exports resulted in the return to production of some 60 million acres of cropland held in reserve under government programs in the late 1960s. With the incentive of high commodity prices in the mid-1970s, expectations of continued expansion of export demand, and the ready availability of low-cost capital, planted cropland expanded to a record high 390 million acres in 1981. The emergence of large stocks of grain in 1981 and 1982 and the withdrawal of nearly 83 million acres from production in 1983 muted—but did not eliminate—public concern about the adequacy of the land base.

> Man's relationship to the natural environment, and nature's influence upon the course and quality of human life, are among the oldest topics of speculation of which we are aware. Myth, folktale, and fable, custom, institutions, and law, philosophy, science, and technology—all, as far back as records extend, attest to an abiding interest in these concerns.
>
> —Harold J. Barnett and Chandler Morse, *Scarcity and Growth: The Economics of Natural Resource Availability*.

At the same time, mounting evidence of soil erosion, water pollution, and overdrafts in water use in some regions, combined with concern about the environmental impacts of agricultural chemicals raised serious questions about the long-run consequences of continued high rates of growth of "high-tech" agriculture. Some statistical evidence of a slowdown in agricultural productivity growth rates added to the worry.

Two major reports in the early 1980s—*Global 2000* and the *National Agricultural Lands Study*—further fueled public concern and debate.[2] *Global 2000*, incorporating and extending high 1970s rates of growth in export demand for U.S. farm products, foresaw a world with rising real costs of production, higher real prices of food and fiber, and increasingly serious environmental problems caused by soil erosion and agricultural chemicals. The *National Agricultural Lands Study*, also assuming high rates of growth in export demand, pointed to losses of prime agricultural cropland to urban and industrial uses and an eventual national "cropland crisis." In the late 1970s, government policy decisions to slow public investments in developing water supplies, coupled with threats of further pollution and increasingly intense competition among urban, industrial, and agricultural uses of water in the western United States, added further to what some foresaw as impending shortages and serious degradation of the nation's natural resource base by the end of the twentieth century, if not before.

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[2] President's Council on Environmental Quality, *Global 2000* (Washington, D.C., CEQ, 1980), and U.S. Department of Agriculture and President's Council on Environmental Quality, *Final Report, National Agricultural Lands Study*, (Washington, D.C., Government Printing Office, 1981).

These are serious fears and charges, and they deserve to be addressed seriously. At the outset, however, we should make clear that we do not accept a basic premise of this line of argument—that the world's resources are akin to a pie of a certain and fixed size that is doomed to be consumed at a more or less predictable rate.

The specter of impending crises in the availability of land and water resources arises in part from preoccupation with their physical limits. But the demand for and use of resource services from that physical stock are determined by human choice and powerfully influenced by social and economic criteria. Scarce resources are socially valuable resources. Economic scarcity of a resource induces an increased supply of technology to substitute for the scarcer, higher-priced resource service. And as a resource becomes scarcer and more socially valuable, users conserve that resource by substituting other resources and by adopting resource-saving technologies and management practices. This principle of substitution is dramatically evident in the performance of U.S. agriculture in recent decades.

Several complex, sometimes countervailing, forces will shape the competition for natural resources into the twenty-first century. In an increasingly interdependent society, competition for natural resources doubtless will heighten. On the margin, the value of water and generally the value of land in nonagricultural uses exceeds its value in agriculture. Thus, where markets are operating unfettered and efficiently, agriculture in many locations in the twenty-first century will be in a weak competitive position for use of those resources, much as it is now. Somewhat related is the likelihood of continued erosion of the political power of agricultural interests at the national level and in many states. By the next century, agricultural policymakers will find it more and more difficult to obtain or even maintain "special-interest" policies for water, other resources, or, for that matter, agricultural commodities themselves.

The growth in nonagricultural demand for resources will be highly uneven, given projected demographic and economic growth patterns to the twenty-first century. Broadly, agriculture close to urban centers, and in southwestern states in general, will experience the greatest—in some areas irresistable—competition from nonagricultural forces.

Agricultural land. Economic pressure on the agricultural land base from nonagricultural demand probably will be lower in the next three decades than in the past three. Most important, U.S. population growth rates are diminishing. The dramatic migration from metro to nonmetro areas, prominent in the 1970s, may slow. The rate of household formation is likely to decline, beginning in the 1990s, because of the age composition of the population. Housing starts, retarded in the early 1980s because of high construction costs, high real interest rates, and recession, may increase in the late 1980s, but ultimately can be expected to slow because of declining rates of household formation. Construction rates for new airports, water and highway transport systems, dams, and reservoirs—all significant past claimants on cropland—already have slowed. There are, of course, important regional and local exceptions to such generalizations. In the Sunbelt states, for example, competition for land and water will intensify, posing critical choices among agricultural, urban, industrial, and other enterprises in the use of resources well before and into the twenty-first century.

Seen in the light of the principle of resource substitution and prospects for lesser growth in competition for land for nonagricultural uses, an impending "cropland crisis" seems less likely than was popularly depicted in the 1970s.

The national cropland base is estimated to be about 540 million acres—413 million acres of current cropland and 127 million acres of pastureland, rangeland, forestland, and other land of "high" or "medium" potential for growing crops (figure 5). Although the annual net conversion of 875,000 acres of cropland in 1967–75 was highly dramatized, the cumulative conversions during those nine years constituted only slightly more than one-tenth of 1 percent of the cropland base. But preoccupation with a single, national level statistic can be misleading. Soil characteristics differ, and land in one area may not be a perfect substitute for land in another area in either a physical or economic sense. The cropland base is a valuable national asset that warrants prudent husbandry.

Of the 127 million acres considered to have "high" and "medium" potential for conversion to cropland, about 50 million are in pasture and 70 million in rangeland. This land would be an obvious first choice for conversion, but it clearly would have negative effects on livestock production. Another 30 million acres of the potentially cultivable land are privately held forests. Putting that land under cultivation generally would cost more than converting pasture or rangeland, and it would marginally depress the production of forest products.

Growth in demand for food and fiber is likely to be expressed not only in demand for additional cropland, but also in more intensive uses of cropland already in production. Increased intensity could be achieved in several ways, among them greater use of inputs such as fertilizer, pesticides, labor, and water, shifts from lower to higher value crops, higher plant population per acre, and reductions in crop failure and summer fallow.

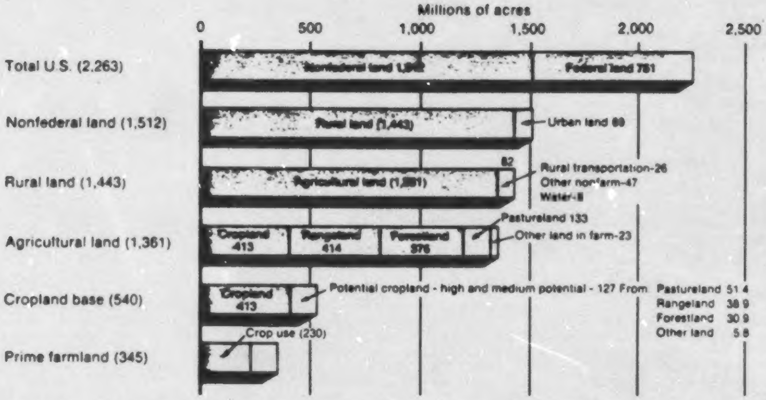

Figure 5. The agricultural land base of the United States. Note that the total includes 2 million acres classified as "nonagricultural" that were deemed potential cropland by the Soil Conservation Service. Source of data: U.S. Department of Agriculture and the President's Council on Environmental Quality, *Final Report, National Agricultural Lands Study* (Washington, D.C., Government Printing Office, 1981) p. 9.

Double-cropping is another way to produce more from the same amount of land. According to Robert Boxley, 14 million acres were doubled-cropped in 1981—three and a half times the 1969 level.[3] Boxley points to several factors conducive to expanding double-cropping—faster-maturing plant varieties with shorter growing seasons, improved machinery and equipment, and minimum or no-till technology. He suggests that, by 1992, double-cropped acreage might be 22 million acres, with much of the increase occurring in the Delta and southeastern states.

Expanding the land base and using it more intensely means capital investment, improved management, and increased use of other inputs. But it also means several types of social costs accruing over long periods but not incorporated immediately or fully into markets for resources or products—environmental degradation and loss of wildlife habitats, for example. Of the various environmental threats, soil erosion probably is the most significant, through its effects on water quality and potential productivity losses on agricultural cropland. These effects, however, tend to be highly localized.[4] Regardless, the potential to exacerbate such environmental and productivity costs increases as the cropland base expands. The supply of cropland probably will not physically or economically limit U.S. food production by the beginning of the twenty-first century, but actions to preserve it and planning to regulate its use in environmentally acceptable ways at the local level are neither irrelevant nor unnecessary. Indeed, these issues and choices are likely to grow ever larger as the next century approaches.

Water resources. Most people are unaware of agriculture's tremendous thirst. In fact, however, agriculture accounts for 80 to 85 percent of the *total* amount of water consumed each year in the United States. Some other basic points:

- Irrigated land in farms doubled between 1950 and 1978 to a total of nearly 51 million acres.
- Some 93 million acre-feet of water—that is, 22 inches of water per irrigated acre—were used on this land, about 54 percent of it from surface watercourses and the rest from groundwater aquifers.
- The western United States, where more than one-half of the value of crops derives from irrigation, contains 86 percent of the nation's irrigated acreage.
- Irrigated agriculture accounts for roughly one-quarter of the nation's crops and nearly one-seventh of the nation's cropland.

Initially, when the West was settled, water was heavily subsidized by governments and treated almost as a free good by western agriculturalists. The original users not only were allowed to use water without charge, but also were granted water rights as long as what they used was put to "beneficial" use. Also, until recently, low energy prices coupled with federal or state subsidies have helped to keep the costs of moving water low, and this has been important to developing groundwater supplies.

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[3] Robert Boxley, "The Supply of Cropland," Economic Research Service Report, U.S. Department of Agriculture.

[4] Pierre R. Crosson and Sterling Brubaker, *Resource and Environmental Effects of U.S. Agriculture* (Washington, D.C., Resources for the Future, 1982).

According to Kenneth Frederick, however, "The days of cheap water are ending in the West. In many areas, irrigators now depend on essentially nonrenewable water supplies. Current irrigation levels with average precipitation result in the mining of over 22 million acre-feet of water from western aquifers."[5]

In the United States as a whole, the average rate of groundwater withdrawals has risen 3.8 percent per year since 1950, almost twice the rate of increase in the use of surface water; much of the increase was in the water-short areas of the West. Nationally, nearly one-quarter of the groundwater withdrawn is not replenished: the water table is declining an average of up to 6.6 feet per year under 15 million acres of land irrigated by groundwater. From the Rio Grande to Nebraska, in Arizona and California, falling groundwater levels and higher energy costs are boosting substantially the costs of groundwater irrigation. Nor is surface water likely to pick up the slack, since the demands on the rivers and streams of the nation's principal irrigated areas already commonly exceed available supplies. The availability and price of water and energy, rather than land, may be *the* critical natural resource variables for agriculture in the West in the years ahead. Public policy for water in the West is moving from developing additional supply to managing the increasingly more valuable current supply.

What seems likely to ensue over the next several decades is a series of marginal agricultural adjustments to higher priced water—more efficient water application, reduced rates of application, and shifts from lower to higher valued crops. The potential to conserve water in these ways is high.[6] However, the investment capital needed to achieve more efficient irrigation systems is substantial, running into several billions of dollars.[7]

The physical requirements for water to meet projected urban and other nonagricultural uses in the West to the year 2000 are small relative to the total quantities now used in agriculture. Nevertheless, the water issue will force many difficult, controversial choices. One of the major challenges is to develop institutions to reduce distortions arising from policies predicated on an abundant, low-priced natural resource.

Beyond water's physical and economic dimensions lie major issues of water quality. Groundwater contamination from agricultural (as well as nonagricultural) sources is serious in many parts of the country, and western irrigation practices have increased groundwater salinity. As Frederick notes, "Perhaps one-quarter of the lands currently under irrigation in the West are heavily dependent on nonrenewable water supplies, and the productivity of several million additional acres is threatened by rising salt levels."[8] And pesticides and fertilizers may seep into groundwater.

Other water quality problems—dissolved oxygen, suspended solids carrying bacteria, nutrients, pesticides, excessive phosphoric and nitrogenic nutrients—can be laid at agriculture's feet in part, and occasionally in major part. The 1972 Federal Water Pollution Control Act set forth ambitious goals to improve water quality. Progress has been made—scattered evidence suggests that some of the worst pollution problems may be abating—but much remains to be accomplished. Maintaining or improving water and environmental quality may require modifying agricultural production practices and ultimately may mean higher direct costs of agricultural production.

Other production factors

Capital As noted, the growth of U.S. agricultural productivity and total output in recent decades springs from the substitution of capital-embodied technologies for land and labor. Several factors were at work.

- Public and private investments in research and development made available a vast array of new or improved technologies, including labor-saving machinery and equipment, improved stocks of seeds, more effective inorganic fertilizers, a plethora of pesticides manufactured for specific control purposes, and scientifically blended, nutritionally balanced animal feeds.
- Institutions such as the agricultural extension services and extensive public and private communication and information systems helped to transfer newly developed technical information from scientist to farmer and assisted its adaptation to local use. Education and improved management skills and techniques speeded the transfer and adoption process.
- Fertilizer use increased from an average of 22 million tons in 1951–55 to more than 50 million tons currently, and pesticide application jumped from 194 million pounds in 1964 to nearly 480 million pounds in 1982.
- Direct energy use in agricultural production now approximates 2,000 trillion Btus annually.

Capital requirements in agriculture for investment and operating purposes will grow substantially in the decades ahead and competition for capital for domestic and international development and for the financing of public debt may maintain real rates at levels well above those of recent decades. Nevertheless, capital availability and costs are not likely to seriously impair growth in U.S. agriculture in the longer-run context of 2000 and beyond. Corporate business structures will become increasingly prevalent among the larger, more highly capitalized and biggest producing farms. And it seems plausible that a growing number of these corporations will be securing investment capital directly from equity markets by the end of the century.

Economic incentives In addition to technology and institutions to effect its transfer, powerful economic incentives reinforced the "technological revolution." Low real prices of petroleum and other energy supplies induced the substitution of mechanical power and fertilizer for higher-priced labor and land. An expanding spectrum of more efficient pesticides offered opportunities for higher crop yields and lower per unit production costs. Between 1950 and 1978, the average value of land increased 650 percent a[illegible] farm wage rates some 380 percent. But the [illegible] of gasoline increased only 150 perce[illegible] that of fertilizer about 84 percent—powerful incentives for resource substitution. And the competitive economic structure of agriculture provided an economic imperative for farmers to make widespread use of the technologies. The results are apparent in table 9. Total inputs in 1980–83 were all but identical to the average of 1950–59, but output averaged nearly 70 percent more. Total factor productivity—the ratio of total output to total input—was nearly two-thirds higher in 1980–83 than in 1950–59.

Labor These technical changes greatly enhanced resource use efficiency in farming, expanded production and kept food and fiber prices low for domestic and foreign consumers, and freed resources from agriculture for producing goods and services elsewhere in the economy. Massive structural adjustments ensued. The number of farms fell from 5.6 million in 1950 to an estimated 2.4 million in 1982. Production became ever more concentrated, with 28 percent of the farms now accounting for 88 percent of product sales. Farm employment fell from 7.2 million in 1950 to 3.4 million in 1982. In the two decades between 1940 and 1960 a net of 21.5 million persons moved to the cities or to urban nonfarm residences—an average of more than 1 million persons every year.

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[5] Kenneth D. Frederick, with James C. Hanson, *Water for Western Agriculture* (Washington, D.C., Resources for the Future, 1982).

[6] Peter Rogers, "Water Resource Technology and Management in the Future of U.S. Agriculture." Paper presented at the Soil and Water Resources Conservation Act (RCA) Symposium: Future Agricultural Technology and Resource Conservation, Washington, D.C., December 1982, p. 8.

[7] Frederick, *Water for Western Agriculture*.

[8] Ibid.

The plunge in farm employment came as farm and nonfarm wage rates approached equilibrium and labor-saving production technologies came on-stream. With labor now representing only 12 percent of all inputs used in farming and farm employment constituting only 3 percent of total U.S. employment, future absolute declines in employment and labor inputs obviously will slow compared to historic rates. However, assuming national economic growth and continuing advances in labor-saving technologies, much of the unskilled labor now in farming may well disappear by 2000. On the other hand, demand will grow for labor with highly technical skills to manage increasingly complex technology and production systems. Overall, however, farming will be a shrinking part of the national labor market, and the same is likely to be true in allied input and product marketing systems if automation and other labor-saving technologies advance as expected.

Input prices. With respect to future prices of off-farm production inputs, that of energy is perhaps most uncertain. Although agriculture adjusted fairly readily to the sharp increases in energy (and energy feedstock) prices in the 1970s, it did so under conditions of generally rising farm product prices. The real price of fossil fuel energy is not expected to rise much for the remainder of this decade and possibly to 2000, but the events of the last decade are fresh enough to remind us that expectations are not necessarily realized. Energy uncertainty highlights the importance of U.S. public policies that will encourage energy conservation, development of indigenous energy supplies—including nonpetroleum sources—and development of energy-conserving technologies and production systems.

Energy is an important component of inorganic fertilizers, but fertilizer prices have increased less rapidly than the price of energy in recent years. Assuming only gradual increases in real energy prices, fertilizer prices seem likely to increase at rates close to general price levels in the decade or two ahead. Further, some project much slower rates of growth in fertilizer use, in part because of higher fertilizer–farm price ratios and in part because of possible environmental regulations.

Table 8. Indexes of Farm Input, Output, and Productivity

Year	Total input	Total output	All inputs	Productivity Labor	Productivity Land^a
1950–59 (Av)	102	67	66	26	64
1960–69 (Av)	98	80	82	50	83
1970–79 (Av)	99	96	97	100	98
1980	103	103	100	112	90
1981	103	118	115	131	113
1982^b	103	117	114	136	116

Note: 1977 = 100.

Source: Economic Research Service, *Economic Indicators of the Farm Sector: Production and Efficiency Statistics, 1981*, and miscellaneous reports.

[a] Measured as crop production per acre.

[b] Preliminary.

As for other types of major manufactured inputs, such as machinery, equipment, feed, and pesticides, long-term supplies seem to pose no major constraint to 2000. Their prices, too, are expected to follow general price trends in the economy.

Governmental regulation. Environmental policies to restrict the use of fertilizer and pesticides may become important enough to significantly change the mix of production inputs by 2000.

About 1,000 new chemicals are introduced each year in the United States, with some 55,000 to 60,000 marketed primarily from domestic manufacturers. Only a small proportion of the total is used directly in agriculture, but it is a proportion that in absolute numbers has been growing exponentially in the last twenty years. Comparatively little is known about the potential toxicity of many of these chemicals, how they are used, whether and how they enter the food chain and other ecosystems, and their ultimate effects on human health and on other species. Controls on pesticides in agriculture have become more stringent, and progress has been made in less toxic but effective pesticides and in integrated pest-management systems that reduce application rates. Nonetheless, pesticides remain a solid part of the production of major field crops.

The issues surrounding agriculture and the quality of the natural environment are neither transitory nor ephemeral. Nor are solutions simple or absolute. It is impossible to reduce the environmental risks of high-tech agriculture to zero: tradeoffs between food production, food quality, and quality of the environment are inevitable. By the twenty-first century, the choices will be more complex, more difficult, and more important to both agriculture and the remainder of society.

Projected production and resource use, 2000 and 2020

Production increases to meet projected demand for U.S. food and fiber might be met through various combinations of natural resources, other production inputs, and production technologies. Three such possibilities are presented in figure 6.

No breakthroughs. In general, the scenarios in figure 6 (column *A*) might be regarded as a "static technology" option. With no increase in per acre yields of major crops, an additional 95 million harvested acres would be needed to meet projected requirements in 2000; more than 200 million harvested acres would be required by 2020. Clearly, demand for cropland of this magnitude would place enormous pressure on the cropland base. The result would not only be dramatically higher land prices, but also higher costs of crop and livestock production, higher food and fiber prices to consumers, and economic pressure on the forestry sector, with possible higher prices for forest products. Soil erosion and water pollution surely would worsen as production expanded to more and more ecologically fragile cropland.

However, such a land-using course of development represents an unlikely outer boundary. Increased demand for land would stimulate substitution of other inputs and management practices. And if prices of farm products rose as a result of higher production costs, the projected increase in consumption of food and fiber would slow. Thus, even without new technologies to enhance crop yields, the "equilibrium" demand for land would fall far short of the forgoing projected land requirements, albeit at levels well above the present.

Optimism. A much different scenario would issue from the "most probable" yield increases projected by scientists participating in the 1982 RCA Symposium

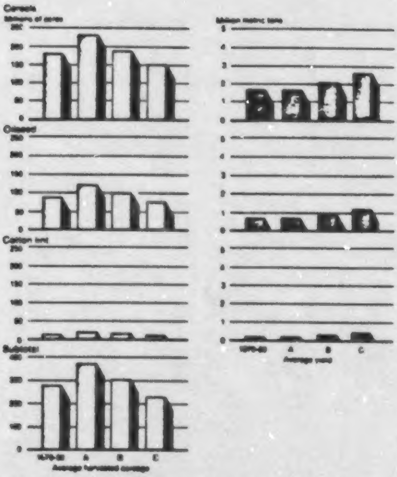

Figure 6. Actual and projected harvested acreage, yield, and production of principal crops. Column A, yields equal to 1979–81 average; column B, yields and acreage projected by EPI, and column C, yields projected by the RCA Symposium.

(see figure 6, column C).[9] Were those yields attained—generally on the order of 1.5 to 2 percent per year gains relative to the 1979–81 average—harvested cropland requirements would decrease by as much as 55 million acres by 2000 and, by 2020, still would be nearly 30 million acres below the 1979–81 average.

The RCA Symposium projections of yields are based on technology that already exists but has not been adopted—the best efforts on today's test plots could be the farmer's average yields in the year 2000.[10] Similar optimism prevails for livestock productivity: probable production gains per breeding animal of 25 percent for beef and pork and 30 percent gain in milk output per cow are projected for the turn of the century. Productivity gains projected to 2020 are based on recently conceived technologies that could be made practical through further research and development during the next forty years. Implicit in these high-tech projections are assumptions of favorable economic circumstances to encourage farmer adoption of technology, improved managerial capabilities, regional and interregional shifts in resource use, increases in double-cropping, and increased or more effective use of inputs such as fertilizers, pesticides, and livestock feed additives. But major gains also would come from such emerging technologies as nitrogen fixation, insect- and disease-resistant and drought-resistant crop varieties, and a variety of genetic-based livestock technologies.

A middle course. An intermediate scenario is presented in column *B* in figure 6. The yield projections are based on long-term trends adjusted to conform with what we believe to be plausible growth rates considering available technologies, probable product–factor price relationships, and the expansion of crop production on lands likely to be less productive than current cropland. Under these conditions, an increase of about 25 million acres of harvested cropland would be needed by 2000—17 million acres to sustain increased production of cereals, 13 million acres for oilseed, and slightly less than 1 million acres for cotton. Reductions of nearly 6 million acres in harvested cropland for barley, oats, and other cereals would partially offset increases in cereal and oilseed acreage. By 2020 nearly 50 million additional harvested acres relative to 1979–81 would be required.

Several potentially important implications can be drawn from these projections. Under the high-tech projections (see figure 6, scenario C), less pressure would be put on the cropland base than has existed in recent years. Indeed, the possibility of major crop surpluses would have to be monitored carefully. However, with intensive use of land in production, increased use of fertilizers and pesticides, and a relative shift in land use to soybeans and corn, problems of soil erosion, water quality, and environmental pollution could be exacerbated. Under the land-using scenario (figure 6, column *A*), the tendency would be to plant "fencerow to fencerow," using relatively less of the high-tech inputs. Soil erosion, water quality, and environmental degradation problems also are part of this picture, but they come from a different source—the expansion of production on land that is ecologically more fragile. Thus, in either case economic and ecologically plausible resource conservation technologies, management practices, and public policies are likely to play critical roles.

In the intermediate projection (figure 6, column *B*) problems of several types might emerge, with erosion heading the list. Again, this is because the projected net expansion of 25 million acres of harvested cropland would require substantial additional capital investment and in some areas of the Midwest, Delta, and the Southeast might push production onto erosive, fragile land. Also, the conversion of land now in pasture could lead to economic adjustments in the livestock–dairy sector in several regions.

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[9] *RCA Symposium: Future Agricultural Technology and Resource Conservation*, Executive Summary (Ames, Iowa State University Center for Agricultural and Rural Development, 1983).

[10] Ibid., p. 17.

Thus, while attaining projected output levels seems reasonable with the economic supply of natural resources, technologies, and nonfarm inputs we expect for the next two decades, it will not be achieved without substantial adjustments throughout the sector, including adjustments of human capital. Nor will such adjustments be distributed evenly among regions, farms, and farm families.

Science and education

Public and private investments in science and education have been mainsprings in the American economy and in improved standards of living, and in no sector is this more evident than in agriculture. Annual internal rates of return to public investment in agricultural research range from 30 to 35 percent, sometimes higher.[11] The benefits are many. Abundant, relatively low-cost food and fiber are available for domestic and foreign consumers. Human resources have been released to produce goods and services elsewhere in the economy. Export markets have been developed and foreign exchange earned for consumption of imported goods and services.

But along with the benefits have come social costs and unanticipated side effects associated with technical change—human and institutional adjustments not readily reduced to dollars, and environmental externalities and risks to human health. And the net benefits of science- and education-based technical change have been unevenly distributed within the population.

Some analysts note evidence of an apparent slowing in long-term total factor productivity growth rates since the mid-1960s as gains from the technologies of an earlier era wane with widespread adoption. Some are concerned that the near-static real total expenditures for agricultural research in the U.S. Department of Agriculture and the state agricultural experiment stations for almost twenty years may further slow productivity gains in the decade ahead. Others allege declining emphasis and reduced real funding levels for basic research in recent years that will magnify the possibility of a future slowdown in productivity growth unless such trends are reversed.

Our projections suggest that long-term planning for agriculture should be predicated on a 70 to 100 percent increase in effective global demand by 2020 for U.S. food and fiber at real prices close to those of recent years. Moreover, we do not allow for the great uncertainty inherent in developing global agricultural systems, or for food assistance to persons in the United States and abroad who are unable to secure adequate nutrition in the marketplace. In short, we believe that meeting the projected demands for 2020 without additional productivity-enhancing technologies and improved production systems would place inordinate pressure on the nation's natural resource base, induce serious environmental consequences, and substantially increase real prices to consumers of food and fiber.

Given these uncertainties and possible undesirable outcomes, it seems prudent public policy to base research, development, and education policies for the long-term future on continued advances in productivity at rates approximating those of recent decades. This means planning: major lags remain between initiation of research, subsequent development, and application. Today's strategies for investment in science, research, and education must be based not on circumstances of the moment but on perceptions of the needs in a distant and uncertain future.

The planning of future agricultural research, however, must be based on more than technology *per se* or a simple multiplication of product output, for innovation and productivity gains come not only from discoveries in the physical and biological sciences. Emphasis should be given to the development of socially appropriate technologies that take into account not only long-term demand for food and fiber but also national goals concerning environmental equality, natural resource conservation, and human health and nutrition. Equally important is innovation enhancing the effectiveness of institutions that govern the use of technology, human development, capital accumulation, and social science research that improves understanding of human and institutional behavior.

What kinds of things do we have in mind when we call for more emphasis on research and development? Johnson and Wittwer identify the following as among the most promising.[12]

- Mechanization and automation, particularly that employing improved electrical sensors and controllers to monitor biological and environmental stress on plant cultural and harvest operations; improved machine designs for, conservation tillage, and reduced fuel and labor consumption
- Thematic mapping and multispectral imagery, including remote sensing techniques, for monitoring resource use, crop conditions, water and energy availability, and weather forecasting
- Improved, more economical, livestock feeding using nonprotein nitrogen combined with forages, by-products, and waste
- Improved animal health through better management systems, vaccines and other products of microbial synthesis, hormonal regulation, and genetic selections and engineering
- Biological nitrogen fixation as an alternative to chemical fixation to increase crop productivity; more effective use of fertilizers through better understanding of nitrification and denitrification processes
- Genetic improvements and genetic engineering to achieve more dependable and higher yields, disease resistance, greater uniformity, climatic and poor-soil adaptability, and improved nutritional value. Increased preservation of genetic diversity for future research
- Basic research in plant growth regulators to increase yields and quality, hasten maturity, extend storage life, and aid mechanical harvesting
- New approaches to pest control through basic research in plant protection and integrated pest management to reduce the number of pests resistant to chemical pesticides; to establish resistance in economically important crops; and to insure health and safety of agricultural workers, nearby communities, and consumers
- Improved reproductive efficiency of livestock through basic research on genetic improvements, semen preservation, pregnancy detection, multiple births, super ovulation, and nonsurgical embryo transfer and implantation
- Food science research to enhance food safety, product storage, handling, marketing, and nutrition, and to develop fabricated foods
- Research to enhance photosynthesis and reduce photorespiration, including identification and possible control of the mechanisms that regulate respiration; identification of growth regulators; and improvements in plant architecture, anatomy, cropping systems, planting designs, and cultural practices
- Assessment of biological effects of in-

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[11] Vernon W. Ruttan, *Agricultural Research Policy* (Minneapolis, University of Minnesota Press, 1982) pp. 242–243.

[12] Glenn L. Johnson and Sylvan H. Wittwer, *Perspectives on the Role of Technology in Determining Future Supplies of Food, Fiber, and Forest Production in the United States*, prepared under contract with RFF by Michigan State University, October 1983.

creased atmospheric carbon dioxide, ozone, and other air pollutants and trace elements on productivity
- Basic social science research regarding risk bearing; conservation and investments in natural resources; organization and control of institutions and institutional decision making and administration; and measurement of human values.

Johnson and Wittwer estimate that a 45 percent increase in agricultural output incorporating about a 30 percent increase in crop yields would be attainable by 2020 by maintaining public funding of agricultural research at the real level of 1983 and as a constant proportion of the value of agricultural output throughout the forty years. To obtain a 75 to 80 percent increase in output and a 55 to 60 percent increase in crop yields in 2020, they estimate that public funding of research would need to be increased at a compound annual rate of 10 percent between 1983 and 1994 and as a constant proportion of the value of agricultural output over the forty years.

Summing up

No one's crystal ball is in perfect working order, and ours no doubt has its share of cracks and cloudy areas. The future, after all, cannot be foretold. Still, we believe this report to be a reasonable, even conservative, estimate of the global shape of food and agriculture when this century finally gives way to the next. That our conclusions tend to be upbeat, especially when compared to 1970s' style prophecies of gloom and doom, is all the more significant in that we do not shrink from addressing negative trends and taking them into account.

Global projections

For example, we foresee many more mouths to feed. World population, although slowing in growth, will increase nearly 40 percent or 1.74 billion persons by 2000 relative to 1980, with the overwhelming majority of them living in the least developed regions of the world. Between 2000 and 2020 population may increase another 1.79 billion to nearly 8.0 billion persons—almost double the population of 1980.

Moreover, global economic growth—rapid during the 1970s—will be comparatively slow in the 1980s as economies recover from recession and, in the case of several developing countries, strive to manage large external debts while restraining inflation. Nevertheless, given an appropriate mix of development policies and an environment conducive to international trade and capital investment, economic growth can increase in the 1990s, with two major possible exceptions: prospects for growth are particularly fragile in Latin America and Sub-Saharan Africa.

The combination of population and economic growth will boost effective demand. At real prices approximating those of 1979–81, we expect effective global demand (consumption) for agricultural products to jump substantially by 2000—about 60 percent for income-sensitive commodities such as meat and oilseed, close to 50 percent for cereal grains, and 35 to 40 percent for milk and natural fibers. By 2020, effective demand could more than double for income-sensitive commodities and increase as much as 90 percent for cereal grains.

Even given these trends, however, we believe that *the world possesses the potential to feed a growing population of 6.1 billion people moderately better by the year 2000 than it fed 4.3 billion in 1980.* But we should stress the word *potential.* To do so will require large investments to improve the infrastructure of agriculture, increased investments in research and education to stimulate development and application to productivity-enhancing technologies, public policies to provide greater economic incentives to agricultural producers in many developing countries, and expanded international trade. We estimate that some 85 percent of projected production increases will depend on greater productivity of resources and only 15 percent on expanding the cultivated land base.

Let us also make clear that we are not predicting a world of perpetual plenty or one unmarked by worry or regions of shortage. Even with the projected modest increases in per capita food supplies and consumption, the global food supply–demand balance in 2000 will be tenuous and subject to much year-to-year instability. Large numbers of people in the developing countries unable to share in economic growth will continue to be undernourished.

U.S. projections

U.S. agricultural production grew nearly 40 percent in the past two decades. By 2000, production of cereal grains and oilseed will need to increase another 30 to 40 percent and that of other major products about 20 percent. By 2020, production of major crops may be 70 to 100 percent above recent levels to meet projected growth in demand in domestic and foreign markets, especially the latter. Indeed, we believe that U.S. agriculture will depend increasingly on cash crops and on the export market.

Greater reliance on exports implies greater instability and uncertainty for U.S. producers and consumers of food and fiber, in large part because of domestic and foreign economic policies. Thus, in addition to being required to grow at a substantial continuous rate into the twenty-first century, the United States needs to maintain a fine balance between [illegible] of food and fiber and a potentially [illegible] export demand.

As we noted at the outset, the productive capacity of U.S. agriculture has expanded a great deal in recent decades, and we see no reason for the process to come to a halt. On the contrary, it can be further expanded through various combinations of improved management of resources and technologies now employed, expanded use of resources, and new or improved technologies to enhance resource productivity. The manner and extent to which productive capacity is expanded and utilized depends on a plethora of complex technological, institutional, and economic variables and on private and public choice, but we believe that the

United States can readily sustain increases in output to meet projected global demand for its products to 2000 at real prices in the neighborhood of those of 1979–81.

To expand productive capacity to permit a near-doubling of output to meet projected demand in 2020 without major increases in real prices will require major public and private investments in science and education to yield new and improved technologies and management systems to maintain or enhance resource productivity. Continued growth in total factor productivity is needed to maintain our competitiveness in world markets and stave off growing pressures on the natural resource base, increasingly serious environmental problems and, ultimately, higher real costs for food and fiber.

Two big unknowns

We close with a word about weather, one of the most important short-term influences on agricultural production and food availability. As will have been noted, we do not expressly treat year-to-year variations in global weather. Rather, by implication, the trends projected assume "normal weather; that is, weather about as favorable as the average during 1970–82. In any given year, unusually favorable weather can push production well above trend and permit higher consumption the following year. Conversely, especially adverse weather would depress output well below trend and subsequently decrease consumption. A series of good or bad years would amplify those impacts, but the year-to-year variations are expected to cluster around the trend.

And undergirding our entire analysis is the assumption that world peace will not be shattered in the decades ahead.

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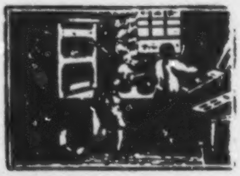

Book review

The Making of Federal Coal Policy, Robert H. Nelson (Durham, N.C., Duke University Press, 1983). $32.50, cloth.

Coal leasing revisited

Although western federal coal resources have been leased for over 100 years, it was not until the decade of the sixties that widespread commercial interest developed that greatly accelerated their rate of disposal. Between 1960 and 1971 so much federal coal was leased that widespread concern developed about whether the Department of the Interior had a coal-leasing plan that was protecting the public interest. By then, 17 billion tons of coal resources had been transferred to private hands—well over 500 times the average yearly rate of all western coal production. To allow for an in-depth review of the situation in order to develop a rational leasing scheme, the secretary of the interior declared a moratorium on further coal leasing that was not lifted until 1961.

Federal coal resources present some unique allocation problems. Much of the western coal is in federal ownership and a good portion of the remainder that is in private hands needs federal cooperation and action for efficient mining. In addition, a large number of environmental issues that only began to receive public attention in the late 1960s added further pressures on those responsible for developing the leasing program. During the moratorium, Congress passed the Federal Coal Leasing Amendments Act (FCLAA) of 1975 to bring what it hoped would be more order into the leasing program.

In *The Making of Federal Coal Policy*, Robert Nelson documents the long history of the numerous attempts, during the moratorium of the 1970s, by Congress and the Department of the Interior to design a coal-leasing policy that would satisfy the competing interests, assure fair market value for the federal coal resources, and provide a leasing rate adequate for systematic development of the reserves but

PREPARED STATEMENT OF WALTER W. MINGER, SENIOR AGRICULTURAL OFFICER, BANK OF AMERICA

Mr. Chairman, my name is Walter W. Minger. For 38 years, prior to February 1, 1984, I was employed by Bank of America and for the last ten of those years, I was the Bank's Senior Agricultural Officer. During my tenure with that global banking organization, I was sent to 45 countries in connection with financial aspects of agricultural developments that were of interest to the Bank of America.

Since my retirement, I have been engaged in consulting on agricultural matters with a diverse group of clients whose interests range from the development of agribusiness projects in foreign countries, the creation of a viable private-sector agricultural credit delivery system in the Middle West, providing an Estate Planning service to farmers, evaluating the agricultural credit operations of a major bank, and so on.

My interests continue to include exploring and becoming involved in ways by which the Less Developed Countries can improve and enhance their agricultural resources for the betterment of their people. So, Mr. Chairman, I am grateful for this opportunity to present to you and your committee this written statement for inclusion in the minutes of your Committee's proceedings.

It is hard to identify the real concerns of multi-national companies who are involved in the development of LDC's food systems. Over a 20 year time span, government to government programs have attempted to improve the ability of the farmers in developing countries to increase domestic production of foodstuffs which is now recognized as a still unachieved goal. Certainly there has been a transfer of wealth from the donor countries to the recipient nations. But the legions of rural small-holders generally poor in all of the necessary modern agricultural resources such as technical knowledge, adequate credit, availability of public and commercial infra-structure, profitable markets, an environment encouraging private enterprise and growth have not usually been the beneficiaries of this largess. It is the urban bureaucracy that has absorbed this flow of well-intentioned but poorly administered capital. As a result, the rural poor are not much better off today, materially or nutritionally, than they were 20 years ago.

Most food projects proposed and begun during the development heyday spanning the years from about 1966 to 1976 were most often co-ventures of host governments, multi-national companies, world-class financial institutions such as the World Bank, additionally supported by U. S., Dutch, German, and French government guarantees and/or insurance. The scope, purpose, and form of the projects were decided by the foreign partners. These decisions were more often than not accepted by the host governments but without really having much say in the development, administration, and control of the project. During this decade, there were, in my view, two major mistakes made in the feasibility analyses made of most projects. The altruistic motives of the leaders heading the developed world's institutions and the overly optimistic expectation of the contribution modern technology to LDC growth and development could make, led to the undertaking of projects that were too large in scale and that depended on the coordination of techniques and systems that were just not applicable to countries with still relatively primitive food infra-structures.

Almost all the large agricultural projects failed. Either they were never completed; they suffered cost over-runs that negated any hope of commercial feasibility; they were not supported by the host governments as originally envisioned. The host governments were quite ready to receive the capital investments, but the idea of being serious about increasing domestic food production and building the economic power of the rural poor was only paid lip service. And why not: The LDC's sales of their few but basic commodities were earning handsome amounts of foreign exchange, foreign investment was pouring into the LDC's at an unprecedented clip, and their domestic standards of living were improving every year - at least for the urban populace.

Then abruptly, the business environment changed. Energy prices increased dramatically; commodity prices declined almost as dramatically; inflation took off; interest rates lagged inflation rates for awhile, but rates have recently hovered at the largest margin over and above the inflation factor that anyone has seen for many years. One result of all these changes and influences is that global trading activity slowed and many countries suffered cash flow problems. The problems third world countries are having with servicing their external debt is well-known to the members of this committee.

The multi-national companies are today generally unenthusiastic about undertaking agricultural/food system development projects on their own in LDC's. Unstable governments, insurrections, bureaucracy, graft and corruption, appropriation and confiscation along with country political philosophies not supportive of private sector enterprise are among the factors that led U. S. companies to decisions limiting investment in LDC's.

A positive result is that LDC's now recognize their #1 priority is to utilize domestic resources - the farmers and the land - to domestically grow more food.

Many small land holders have not even been able to maintain a decent subsistance level of production, let alone produce a little surplus farm product to sell into the commercial sector.

In my mind, one cannot talk about improving the nutritional level of the world's rural poor without considering ways and means to improve the income level of those families. Opportunity to increase income must be provided because it is the only practical way to attack the problems of inadequate diet.

The committee might want to explore a few of the organizations and schemes that have enjoyed some success in raising the income levels of previously desperately poor landless people and smallholders which increase has afforded the families better diets and improved health care.

An outstanding example is the upgrading of poor Turkish farm families through the integrated poultry enterprises developed with the hands-on leadership of the Development Foundation of Turkey.

A more modest but positive improvement in income, nutrition, and attitudes of poor rural people in two villages resulted from the self-help programs initiated by Project Hope in Ghana. This project also included poultry-table eggs for cash sale - and increased production of vegetables for local consumption.

There are a great number of Private Voluntary Organizations operating on a village level in many LDC's. Their projects are modest in both scope and cash investment, but many have achieved a positive impact.

In Thailand, Bangkok Bank has developed rural land and farming projects with either or both crop and livestock orientation that has resulted in great economic improvement for several hundred families. The projects were perceived originally to be high-risk by the bank, but the previously landless people have maintained their debt repayment programs and one must believe that the projects have met the original objectives.

Several years ago, a joint U. S. AID, University of California at Davis, and Government of Egypt program was implemented. It provided a concessionary-rate credit delivery system extension of knowledge, and almost one-on-one supervision. While it required the intensive use of numbers of agricultural technicians, and this is one of the program's defects, it also provided the unschooled Nile Valley peasants with "Look, Jane, look" types of training aids to assist them in modernizing the cultural practices of certain basic crops. The impact on income, nutrition, and agricultural practices has been positive.

In the U. S. there has been a growing concern over the lack of success of the grandiose agricultural projects undertaken and funded during the last several decades and of the failure of government-to-government programs that were supposed to improve the LDC's food producing and processing ability. Little of the money expended to date in these programs has trickled down to the person on the bottom of the system - the landless or the peasant farming 1/2 to 1 1/2 acres of land. There has been little direct or concentrated effort to tap the resources in the private sector.

In recent months, the U. S. Agricultural Development Corporation has been incorporated in Washington, DC. Its mission is to attract a pool of equity capital from the larger U. S. agribusiness entities, leverage the equity by borrowing, and then channeling the resulting pool of loanable funds into private sector enterprises in Less Developed Countries. Of course, its lending, investment, and guarantee operations will be carried on only in those countries that recognize and encourage private sector enterprise. It should be of interest to the committee members that some LDC's who formerly permitted only state-owned companies to be involved in their domestic food systems have finally recognized the folly of continuing to maintain money-losing, inefficient food companies. They now are interested in finding ways to convert public sector companies to private ownership. The U. S. Agricultural Development Corporation believes it can assist in the conversion of these parastatal entities.

Your committee is interested in developing programs that will improve the quality of the diet of hundreds of millions of people presently suffering from inadequate nutrition intake. I can suggest no magic means to accomplish that improvement. Give-aways of our foodstuffs seems appropos only in cases where disaster has occured and large scale hunger and suffering is likley.

Concessionary pricing and repayment terms have been more successful in moving out surplus U. S. commodities than these incentives have been as creators of a more productive domestic LDC food system. The use of better seedstocks has often resulted in short-term increases of locally produced basic foods. But the usually higher cost of the improved varieties, the inconsistent availability of the new seeds, lack of import licenses due to dollar shortage, and the lack of economic incentives to warrant the higher growing costs work against the institutionalizing of the new techniques.

In my view, the following are some of the inputs that could be made to accomplish several things: 1) Raise the income potential or reduce the unit costs; 2) permit, as a result of (1) an improvement in the standard of living which may include the family's choice to eat better.

I. Explore the present food production system to determine what local products, seedstocks, practices are available or amenable to change so as to improve food production. These purchases would utilize local currency rather than scarce foreign exchange.

II. Provide local demonstration plots and simple instruction to encourage the use of practices and techniques that will have a positive impact on production.

III. Help design and demonstrate the construction of village warehousing to decrease the present tremendous loss of foodstuffs to vermin, spoilage, and loss from leakage and theft.

IV. Help develop a communications network or system that disseminates market information - availability and prices - for domestically produced products. This may not be feasible due to government price controls and/or the manner in which the country's food system is effectively controlled.

V. Encourage the participation of the U. S. private sector in ways that utilize the private sector in the LDC's. What is badly needed is the creation of an entrepreneurial class in most of these countries. The most feasible way to accomplish this is to provide some economic incentives. There are existing and operating, small to medium size food and agricultural service, supply and processing businesses that could benefit from the infusion of capital technology management, and/or credit. LDC governments must provide a business and political climate that is supportive of growth and progress in the private commercial sector. A vehicle such as a U. S. based agricultural development company would be able to tap the food system expertise of its U. S. shareholders or cooperating participants as well as capital to permit these foreign privately held agribusinesses to expand, and by doing that, increase the country's GNP, and provide to the local farmers, a growing market for their products. This approach is not designed to be charitable or to accomplish social restructuring. Its success, or failure, is strictly dependent on how well the users of the management/technology transfer - equity infusion credit program integrate the program's inputs into their commercial ventures.

A group approach to assisting LDC agribusiness reduces the visability and exposure of the individual U. S. agribusiness company. The concept of having a number of such companies join in a mutual effort to accomplish something positive is encouraging, as is the pool of broad-based talents and skills that such a group effort provides to capital-starved and often technology-starved LDC agribusinesses.

Mr. Chairman, I again want to thank you for giving me the opportunity to submit my personal statement relating to hunger and my thoughts as to how the U. S. could assist the global food system. Enhancing the production, preservation, and distribution of foodstuffs in ways that might improve the small farmer's and the LDC agribusinessman's income should have a beneficial effect on nutritional levels. LDC growth in GNP should provide, over time, some additional opportunities for U. S. exports of capital and consumer goods to these LDC's many of whom have excellent long-range growth potential particularly if the income levels of their farmers can be raised.

PREPARED STATEMENT OF J. IAN STEWART, DIRECTOR, WORLD HUNGER ALLEVIATION THROUGH RESPONSE FARMING, WHARF

SUBJECT and PURPOSE: Submission of written testimony for inclusion in the record of the Congressional Hearing held by the House Select Committee on Hunger in Davis, California on July 21, 1984. Purposes are (1) to relate university research to research on hunger overseas, (2) to identify the most threatening aspect of the world hunger problem as to its nature, location and requirements for solution, and (3) to briefly outline the technology which can achieve a solution, the present state of the art and future requirements.

Chairman Leland opened the hearing by saying the major hunger problem in the world today is in sub-Saharan Africa among the rural poorest of the poor, i.e., subsistence farm families. He outlined the requirement as appropriate technologies ready for adoption now, which can be fully adopted and functional in a time span of 10-15 years.

I wish to say I fully agree. For the past six years I have been a USDA scientist on a USAID funded research project in Kenya. My titles were Supervisory Soil Scientist and Agrometeorologist. The project title was "Development of (Food) Cropping Systems for the Marginal Rainfall Areas", later changed to "Dryland Cropping Systems Research Project". Objectives were to stabilize and enhance food crop yields in the semiarid areas.

I was the principal author of the project in January, 1975, and worked within it in Kenya from its start in October, 1977 to its termination in January, 1984. The people we served are the poorest of the poor. They are smallholders farming essentially at the subsistence level in low rainfall zones characterized more by extreme variability in rainfall from season to season than by the amount. More will be said on this critical point in the discussion of a solution.

Relation of University Research to Hunger Research Overseas -

Regarding the role of the university, the agrometeorological research in Kenya was a direct extension of my Doctoral research at UC Davis, which began in February, 1967 and continued (well beyond the degree) until September, 1977. Principal research collegues at Davis were Dr. Robert M. Hagan and Professor William O. Pruitt, both of Water Science in the Department of Land, Air and Water Resources.

WORLD HUNGER ALLEVIATION THROUGH RESPONSE FARMING

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The Davis investigations, termed "water production function research" were a pioneering effort aimed at developing transferable relationships, useful anywhere in the world, to make quantitative predictive estimates for important crops of (1) their water requirements in any given set of climatic conditions, (2) their ability to extract water from any selected soil, considering its depth and water holding characteristics, (3) the maximum yields attainable with plentiful water and other growth factors, as limited by sunshine, and (4) the rate of decline in yield when water supply is limiting.

The above relationships were developed at Davis for corn, grain sorghum, beans, tomatoes, alfalfa and cotton. In the 1977 drought in California, these findings formed the basis for published guidelines instructing farmers on how to attain maximum crop yields and returns when irrigating with limited water supplies (California Agriculture, April, 1977 - attached). This was the first demonstration of the practical field applicability of information arising from what had initially been rather basic research.

Kenyan food crop production in the marginal lands lies at the other end of the agricultural spectrum. Rather than being high technology agriculture with a tightly controlled water supply, it is low technology agriculture with a totally uncontrolled, even capricious water supply. Costly inputs such as fertilizers are not used by the great majority of Kenyan smallholders because they have no cash resources. No lending agency exists which is willing to face the very high risk of low rainfall.

The transferable relationships developed at Davis were reconfirmed in Kenya for corn, grain sorghum and beans, including tepary beans supplied by the University of California at Riverside, and were also determined for pearl and proso millet. Findings were that crop water requirements and crop maximum yields with respect to sunlight could be estimated as well using the Davis relationships as those determined in Kenya.

On the other hand, soil water extraction by a given crop was different in Kenya from that in Davis, so modifications were required to transfer this relationship. Additional modifications were required in the relationship which estimates rate of decline in crop yield when water is limiting. These modifications reflected both environmental and management factors not encountered at Davis. Principally, they are very low levels of water supply, requiring reduction of plant numbers (thinning) to realize maximum yields, and the fact that little or no fertilizer is used. However, when these new factors are properly considered, the relationships again are transferable. Their utilization in Kenya will be discussed.

Two additional points are pertinent to the role of universities. First, a Kenyan counterpart of mine was funded by the project to take his Masters degree with my former collegues in Water Science at UC Davis. His research double-checked the transferability of the soil water extraction relationship. Second, despite complaints from some speakers today that research publications go by the boards overseas, my counterparts and I have published nine journal papers and three proceedings papers.

The Hunger Problem in Africa

In my opinion the hunger problem in Africa is the result of very rapid population expansion into the marginal rainfall areas - which areas are historically the best of the grazing lands and have never before been cropped intensively for human food supplies. Critical aspects of this problem are as follows:

1. Traditional farming practices derive from the high rainfall areas, so do not apply, and in fact result in unnecessary complete crop failures in the marginal areas in very low rainfall seasons.
2. Food must be produced by the people in these areas, not only to preserve their dignity, but because there is no recourse. Due to their geographical positioning and the lack of infrastructure, sufficient food aid cannot reach them in times of drought. This becomes increasingly true with each passing year, and explains why life-threatening drought is an ever more frequent phenomenon.

Regarding the severity of the problem and the time frame we are looking at, consider the example of Kenya. All of sub-Saharan Africa has high population growth rates, but Kenya leads the list at 4% net increase per annum. This means population is doubling every 17 years. At independence in December, 1963, it stood somewhere around 9 to 10 million, and today is at 19.7 million. In January, 1975, when the government of Kenya (and the government of Tanzania) requested our project, the population had swollen to about 16 million. The increased numbers were largely absorbed in the marginal rainfall areas. A severe drought was underway and extreme difficulties were already being encountered in the physical delivery of food aid.

Today there are six million more people and they too are largely in the marginal areas - only still further removed from outside assistance than the earlier settlers. In the next 10 years there will be another 10 million Kenyans, and by the dawn of the 21st century, another seven million on top of that. Presently, these areas of Kenya are entering what appears likely to be another severe drought cycle. Soon we will see just how severe the problem is at present.

The Proposed Solution

The overall solution will be population control, possibly first by starvation, but certainly eventually by choice. Meanwhile, the question appears to be whether the transition from runaway to controlled population growth must be humanly unacceptable and politically destabilizing, or whether it can be made palatable through application of appropriate technology.

It has been said here that the Rome Conference of a decade ago concluded that we have the technology at hand to solve the hunger problem. I must challenge that conclusion. If it is true that the increased numbers of people are going largely into the marginal rainfall areas, and that they must largely feed themselves, then the problem is a more complicated one than many concerned persons realize.

Simplistically, the African landscape may be viewed as three zones. First, there are the traditional farming areas in the highlands, where, like our own midwest, rainfall is quite satisfactory for say nine seasons, and quite low in the tenth. Cropping systems in this instance are tailored for the nine seasons and losses are absorbed in the tenth. The rule is rather high technology agriculture, and yields compare to our own.

The other extreme is the desert areas with consistently low rainfall. Except for the odd irrigation scheme, animals are herded on these areas by limited numbers of pastoral peoples. Any crops cultivated are strictly the most drought tolerant, and yield expectations are low.

The marginal areas where the population fueled problem lies are characterized not by low rainfall, but by inconsistency. This season may duplicate the highlands, next season the desert, and the third in between. Without knowledge of the nature of the coming season, we cannot design an appropriate cropping system for it.

The research in Kenya has produced an answer to this dilemma.In late 1980 it was found that the monsoonal rains of Eastern Kenya, while notoriously unpredictable in advance of the season, do become usefully predictable for purposes of selecting crop types and appropriate planting practices on the day the seasonal rains actually begin. Thirty days into the season a pattern will have been established, allowing five out of six seasons to be correctly categorized as good, fair or poor. Farmers can beneficially respond to this categorization by applying fertilizers in higher rainfall seasons, or by reducing plant numbers (thinning) in lower rainfall seasons.

This flexible system of farming according to actual conditions encountered has been termed "Response Farming". Its effectiveness has been demonstrated in Kenya in farmer-tended plots on their own smallholdings over four consecutive rainfall seasons. Analyses of the research results show that crop failures can be reduced from one season in two to one in seven without the use of fertilizers, and to one failure in nine seasons when fertilizer recommendations are followed.

In better rainfall seasons high yields are attainable. Overall, yields can be doubled without fertilizers, and can reach four times present levels with them. Economic analysis indicates the incremental costs of these management procedures would average approximately $4.50/acre and $20./acre respectively with corresponding incremental net returns of $18. and $44./acre, thus rates of return of 400% without the use of fertilizers and 220% with fertilizers.

acknowledged weaknesses in the conventional extension approach in many LDCs, an unconventional new approach may prove both more exciting and more effective. It should take full effect in the 10 to 15 year time frame we have to work in.

The new extension approach proposed would work through the rural school system. Children living on farms would be guided by their teachers in carrying out response farming plots on their home places. They would carry out all steps involved, from establishment and reading of rain gauges through season categorization and laying out the plots on the farms, to figuring seeding and fertilization rates, tending the plots and harvesting. Everything would be recorded in workbooks, adding greatly to their education in math, reading, writing, science, etc.

On-farm meetings at harvest time would include parents and other invited farmers, teachers, extension agents and others interested. There the practices and results would be compared with conventional management and discussed, after which plans would be formulated for the next season. After two to four seasons in this program, the students would be totally familiar with the response farming system and how to operate it in the field. Within ten or so years they themselves will be the farmers, and with normal spread to neighbors, the system should be in widespread use.

At present, teachers involved in the program might be native, or might be from volunteer agencies such as Peace Corps. There are a large number of such teachers in Africa today. A donor agency would provide the expertise for initial gathering of data on climate, soils, crops and practices. Also for analyzing and interpreting these data and for training teachers and agricultural extension agents to utilize the findings. The same agency might well provide such needs as school workbooks, inexpensive raingauges, and where required, such inputs to the small farm plots as seeds and fertilizers.

It is my firm belief that the only satisfactory solution to the hunger problem in Africa must be an on-farm solution. The new methodology for rainfall forecasting is the mechanism which can make this feasible in the marginal/variable rainfall areas.

Note.--Additional material submitted for inclusion in the record retained in committee files.

The above findings are published in recognized scientific journals under the following references:

1. Stewart, J. Ian and Charles T. Hash. 1982. Impact of weather analysis on agricultural production and planning decisions for the semiarid areas of Kenya. J. Of Applied Meteorology. Vol. 21(4):477-494. April.
2. Stewart, J. Ian and D.A.R. Kashasha. 1984. Rainfall criteria to enable response farming through crop-based climate analysis. E. Afr. agric. For. J. (Special Edition - In Press).
3. Stewart, J. Ian and W. A. Faught. 1984. Response farming of maize and beans at Katumani, Machakos District, Kenya: Recommendations, yield expectations and economic benefits. E. Afr. agric. For. J. (Special Edition - In Press).

A reprint of the first paper and abstracts of the other two are attached.

The response farming technology is ready today for farm field application in the marginal rainfall areas of Africa, with the capability of increasing food crop yields significantly in the next rainfall season.

What is required is to gather data from sites of interest, and analyze them to determine the rainfall forecasting criteria which apply to each. Data gathered will also include information on present crops and practices, so that appropriate modifications can be introduced into the response farming recommendations for each category of rainfall season. This will produce immediate benefits for those using the method..

Longer term questions are two: 1. How do we assure that the crops and practices recommended are indeed those which will maximize food production with the available water? 2. How do we achieve widespread adoption of the new response farming technology?

The answer to question one above is the same as in the past. Conventional agronomic research will follow after adoption of the system in order to effect refinements. The difference is that the water supply conditions for which the modified crop/practice system is being designed will be known, making refinement possible. Note that the new system will not entail three separate cropping systems for the three rainfall season categories. At planting time, the predicted rainfall conditions will govern the mix or relative apportionment of the crops being grown, rather than switching types of crops altogather. Thirty days later the practices affected will be those which permit full and efficient utilization of available rainfall, e.g., fertilizer rates, and those which prevent the crop from being unnecessarily stressed when water is short, e.g., thinning of plant numbers. Another key aspect will be crop rotations to enhance natural soil fertility.

Regarding question two as to how to achieve widespread adoption, a two-pronged approach is here proposed. First there is the conventional approach. Agricultural extension officers will be trained in simplified methods of categorizing the rainfall seasons, and conveying the appropriate response farming recommendations to the farmers. Since there are